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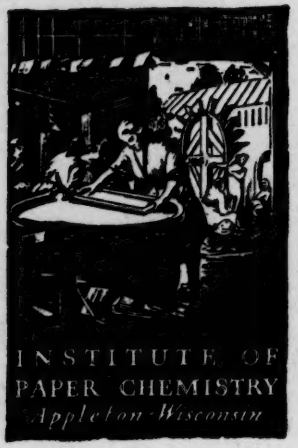
BULLETIN

OF

THE INSTITUTE OF PAPER CHEMISTRY



AFFILIATED WITH

LAWRENCE COLLEGE

APPLETON, WISCONSIN

LIBRARY NOTES

OCTOBER • 1953

Volume 24 Number 2

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Periodicals, Books, and Pamphlets Added to the Library During September

PERIODICALS—BACK VOLUMES

Shirley Institute Memoirs. v. 1-10, 1922-31.

BOOKS AND PAMPHLETS

BIOLOGICAL CHEMISTRY

ANNUAL REVIEW of biochemistry. J. Murray Luck, editor; Hubert S. Loring and Gordon Mackinney, associate editors. Stanford, Annual Reviews, 1953. v. 22. 729 p.

CHEMISTRY—YEARBOOKS

CHEMICAL SOCIETY, *London.* Annual reports on the progress of chemistry for 1952. London, The Society, 1953. v. 49. 429 p.

SOCIETY OF CHEMICAL INDUSTRY. Reports on the progress of applied chemistry. London, The Society [1953] v. 37, 1952. 983 p.

CHEMISTRY, INORGANIC

SNEED, M. CANNON, MAYNARD, J. LEWIS, and BRASTED, ROBERT C. Comprehensive inorganic chemistry. New York, Van Nostrand [c1953] v. 1. 232 p.

CHEMISTRY, ORGANIC—SYNTHESIS

ORGANIC SYNTHESES, an annual publication of satisfactory methods for the preparation of organic chemicals. Charles C. Price, editor-in-chief. New York, Wiley, 1953. v. 33. 115 p.

CHEMISTRY, PHYSICAL AND THEORETICAL

ANNUAL REVIEW of physical chemistry. G. K. Rollefson, editor; R. E. Powell, associate editor. Stanford, Annual Reviews, 1953. v. 4. 493 p.

INDEXING

WHEELER, MARTHA THORNE. New York State Library indexing; principles, rules and examples. 4th ed. University of the State of New York bulletin no. 1230. [Albany] The University of the State of New York Press [1942] 76 p.

MICRO-ORGANISMS

ANNUAL REVIEW of microbiology. Charles E. Clifton, editor; Sidney Raffel and H. Albert Barker, associate editors. Stanford, Annual Reviews, 1953. v. 7. 505 p.

PAPER SPECIALTIES

OGURI, SUTEZO. Nihonshi no hanashi [An account of Japanese paper] Tokyo, Sodai shuppan bu, 1953. 180 p. [The entire booklet is written in Japanese]

PLASTIC MATERIALS

MODERN PLASTICS encyclopedia and engineer's handbook, 1953. New York, Plastics Catalogue Corp., c1953. 943 p. + 1 loose fold. chart.

SAFETY

STEMP, LILLIAN. Safety manual for the graphic arts industry; a joint publication of the National Safety Council and the Education Council of the Graphic Arts Industry, Inc. [Chicago, National Safety Council; Washington, Education Council, c1953] 96 p.

STATISTICS

U. S. BUREAU OF THE CENSUS. Annual survey of manufactures: 1951, prepared under the supervision of Maxwell R. Conklin. Washington, U. S. Govt. Print. Off., 1953. 253 p.

U. S. DEPARTMENT OF COMMERCE. *Office of Business Economics.* Business statistics; statistical supplement to the *Survey of Current Business.* 1953 biennial ed. Washington, U. S. Govt. Print. Off., 1953. 320 p. [Previous editions were issued under the name of the U. S. Bureau of Foreign and Domestic Commerce. *Office of Business Economics*]

TRADE DIRECTORIES

GREEN BOOK buyers directory, 1953-54. 41st annual ed. Published as part of annual subscription to the weekly newspaper, *Oil, Paint and Drug Reporter.* New York, Schnell, c1953. 1560 p.

SOURCE OF SUPPLY directory, 1953 ed. Chicago, Howard Publ. Co., 1953. 964 p.

WOOD-PULP

UNITED STATES PULP PRODUCERS ASSOCIATION. Wood pulp statistics (1953 ed.). New York, The Association, 1953. 249 p.

Survey of Periodical Articles

The following are abstracts of opinions expressed by writers in the technical journals. The Institute of Paper Chemistry takes no responsibility for the opinions here summarized.

ADHESIVES

HOFTON, J. Thermosetting synthetic-resin adhesives. Repts. Progr. Appl. Chem. 37: 812-18 (1952); *cf.* B.I.P.C. 23: 82.

The chemical types, applications, and commercial importance of adhesives for wood and metal and as binders for wood waste, foundry sand, and like materials are reviewed. 41 references. R.A.S.

AIR CONDITIONING

KIEFER, OTTO. Air conditioning in paper manufacture and conversion. Das Papier 7, no. 13/14: 267-8 (July, 1953). [In German] *cf.* B.I.P.C. 24: 3.

This is the identical article listed in the previous reference under the name of Wilhelm Jobst. 6 figures. E.S.

ALKALINE PROCESSES

NOLAN, W. J. Studies in continuous alkaline pulping. III. The pulping of slash pine. Tappi 36, no. 9: 406-17 (September, 1953); *cf.* B.I.P.C. 23: 230-1.

Slash pine has been converted into chemical pulps of good yield by continuous methods. Concentration was maintained by the use of a very high liquor-wood ratio, 40:1. Chips were softened by presteaming 10 minutes at 125 p.s.i. steam pressure and hammer-milled prior to pulping. Screened yields as high as 46%, based on original unsteamed wood, were attained in 15 to 20 minutes cooking time. Pulping data for a wide range of liquor concentration—20 to 80 grams sodium oxide per liter, and steam pressures, 115 to 170 p.s.i., are presented. Pentosan contents of pulps are lower than those found in conventionally cooked pulps. No relationship could be found between pentosan content and physical strength of pulps. The concentration of the cooking liquor seems to affect the physical strength, the strongest pulps being produced at the lowest concentrations. Pulps 95% as strong as the best commercial sulfate pulps have been produced in cooking times of less than 30 minutes. Using the permanganate number as a measurement of bleachability, these pulps appear to have the same bleach requirements as conventionally cooked pulps of the same lignin content. Calculations of injections necessary for the maintenance of concentration by fortification of cooking liquor with high-strength alkali are presented. 4 tables, 10 figures, and 9 references. E.S.

ANTIOXIDANTS

BENTZ, R. W. Antioxidants for food papers. Modern Packaging 27, no. 1: 141-3 (September, 1953).

Fats and fat-containing foods packaged in paper containers and wrapping papers are unusually susceptive to oxidative rancidity, since the fat is

absorbed by the paper, diffuses and spreads, exposing a large area of fat to the air. Oxidative rancidity is also promoted by the direct contact of the fat or oil with the pro-oxidative metals in the paper. An investigation of this problem by the Eastman Chemical Products, Inc. showed butylated hydroxyanisole (trade name, Tenox BHA) to be effective in inhibiting rancidity; results of experiments on genuine vegetable parchment, 30-pound dry waxed parchment, bleached glassine, and paperboard used to wrap various fats and oils are given. This antioxidant can be applied to paper by the tub, roll, or spray method in the form of an aqueous emulsion; in waxed papers, the antioxidant can be added directly to the molten wax and applied to untreated paper. A greater amount is required for the waxed paper than for stabilizing the paraffin wax. 4 illustrations. R.A.S.

ASSOCIATIONS

PULP & PAPER. Industry organizations and their leaders 1953-1954; associations and institutes. Pulp & Paper 27, no. 8: 180-1 (Aug. 1, 1953); *cf.* B.I.P.C. 22: 808.

Organizations of the United States and Canada are listed (including photographs of presidents and chairmen), as well as the addresses of their respective headquarters. E.S.

RIDDELL, G. L. P.A.T.R.A. and the box maker. World's Paper Trade Rev. 139, no. 24: 1780, 1782 (June 11, 1953).

A survey of the work of the organization was presented at a conference of the British Paper Box Federation, in which the information service of PATRA, the handling of members' problems, and some of the basic research projects were reviewed. E.S.

[RIDDELL, G. L.] PATRA's work on paper problems. World's Paper Trade Rev. 140, no. 5: 311-12 (July 30, 1953).

Excerpts are presented from the annual report covering the period April, 1952-March, 1953 which contain references to the work done at Leatherhead on paper, particularly with regard to the properties of importance to printers. Optical properties (gloss), smoothness, sizing tests, static electricity, absorption drying, correlation between acidity and drying, warping of bookcovers, durability of books, mold and insect attack on books, and packaging research are considered. E.S.

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY. Review of 1952-53 section meetings. Tappi 36, no. 9: 114-19A (September, 1953).

A record of the meetings held by the local sections of TAPPI during the indicated period is presented. E.S.

BARKERS AND BARKING

ANON. The "Mira" barker. Pulp Paper Mag. Can. 54, no. 9: 152, 156 (August, 1953).

The Mira barker, a portable one-log machine made by AB. C. J. Wennbergs Mekaniska Verkstad in Karlstad, Sweden, is described. The barking operation is performed by three scrapers mounted on a rotating drum which is carried in two strong SKF ball bearings and rotates at a constant speed of 275 r.p.m. The expansion of the barking tools is effected through spring-loaded counterweights; the eight feeding rolls are all driving rolls, arranged in four hori-

zontally spring-loaded pairs, and are self adjusting. These features make possible both intermittent feeding of one log at a time as well as a continuous flow of log against log irrespective of varying thickness. 2 illustrations. R.A.S.

BELL, G. E., and MARTIN, P. E. Bark removal methods and machines. Tappi 36, no. 9: 38A, 40A, 42A, 44A, 46A, 48A, 50A (September, 1953); *cf.* B.I.P.C. 24: 107-8.

A review of bark removal methods under the headings: cutting knives, rubbing friction, hydraulic erosion, and thermopressure is presented. Data on the individual barkers belonging to each group are given in tabular form. 4 tables and 20 illustrations. E.S.

BARKERS AND BARKING—CHEMICAL

JAHN, EDWIN C. Chemical debarking of trees. Pulpwood Annual: 7-8, 10 (1953); Pulp Paper Mag. Can. 54, no. 9: 151 (August, 1953). [Abridgment]

With reference to the chemical debarking project at the College of Forestry at Syracuse, N.Y., a systematic study sponsored by a number of companies, the author reviews recommendations based largely on the results of this study. Many factors influencing chemical debarking have been investigated, and their influences are now known and can be taken into consideration. These include geographic location, diameter, tree class and growth vigor, season of year, composition of treating chemical, temperature, rain, species, effect of wetting agents and stickers, time of standing after treatment before felling and peeling, etc. A tool for measuring quantitatively the peelability of bark has been developed. A 40% sodium arsenite solution has been found the most effective chemical. A stain or dye should be added to prevent errors and green is recommended; the use of bright-colored dyes, such as red, should be avoided since this may attract wildlife. If proper precautions are taken, the use of treating chemicals does not endanger wildlife. There is a rapid movement of the chemical from the girdle face after treatment, with most of it gone in 48 hours. The chemical does not remain in the pulp made from treated wood. 4 illustrations in the first reference. E.S.

BEATING

STEENBERG, BÖRJE. How cheap can the beating of paper be made? Svensk Papperstidn. 56, no. 15: 600-1 (Aug. 15, 1953). [In Swedish]

With reference to the frequent announcements for new beating and refining equipment with high claims for reduction in power consumption, the author shows that these claims are exaggerated and discusses the reasons for the low efficiency of a beating engine. It is true that constructions with a much more precise operating performance have been placed on the market than are generally available in Swedish mills; however, the resulting power savings are small. E.S.

BIRCH

JENSEN, WALDEMAR. Laboratory investigations of birchwood as a raw material for the manufacture of pulp. Norsk Skogind. 7, no. 8: 254-9 (August, 1953). [In Swedish; English summary]

The chemical characteristics of birchwood for pulp production are reviewed. Investigations on the cooking, beating, and bleaching of birch pulps, as well

as their strength properties, are discussed. The possibility of producing dissolving pulps from birchwood is mentioned. 5 tables, 4 figures, and 13 references. E.S.

BLACK LIQUOR—OXIDATION

SYLWAN, OTTO. Practical results obtained with black liquor oxidation. Paper Trade J. 137, no. 10: 14-16 (Sept. 4, 1953).

The author describes the advantages resulting from the installation of a Trobeck black-liquor oxidation system (*cf.* B.I.P.C. 22: 561) at Herre Fabrikker A.S., Porsgrunn, Norway. The production capacity of the recovery system increased by 34%; the credit for part of this increase should also go to a minor change in the cascade evaporators. Savings resulted also in fuel consumption; sulfur losses and reburned-lime requirements decreased. Corrosion in the mill, particularly in the evaporators, was greatly reduced. The operation of the plant has not caused any troubles since its installation two years ago; maintenance costs are negligible. However, for optimum results it is necessary to remove as much as possible of the soap from the black liquor prior to feeding it to the oxidation tower. 5 figures. E.S.

BLEACHING

LANDOLT, A. The brightening of textiles with fluorescent substances. Textil-Rundschau 8, no. 7: 337-45 (July, 1953). [In German] *cf.* B.I.P.C. 19: 380-1.

The author describes the application of fluorescent brightening agents to various textiles and the possible results, with particular reference to the different grades of "Uvitex" fluorescent bleaching agents manufactured by Ciba AG. 1 table, 15 figures, and 31 references. E.S.

WOODSIDE, VERNON, and MACLEOD, K. S. Chlorine dioxide for pulp bleaching. Paper Trade J. 137, no. 8: 26-31 (Aug. 21, 1953); *cf.* B.I.P.C. 23: 787.

Following a brief review of the history of chlorine dioxide and its application to pulp bleaching, the development of the Mathieson process (generation of chlorine dioxide by reduction of the chlorate with sulfur dioxide in the presence of sulfuric acid) and the Mathieson generator are described. Production cost data are included, showing an average value of $120,000 for the investment and $0.069/lb. of available chlorine as chlorine dioxide. To date, the most widely adopted practice in regard to chlorine dioxide bleaching is its application in a final acid bleaching stage. Although some problems of equipment corrosion are encountered under these conditions, they appear to be the optimum for the production of fully bleached pulps of high color stability. 1 table, 1 flowsheet, 5 figures, and 18 references. E.S.

BOARD

CHEMICAL ENGINEERING. Medium board. Chem. Eng. 60, no. 9: 276-9 (September, 1953); *cf.* B.I.P.C. 22: 813.

A pictured flowsheet of the Chipcore process is presented. Chipcore is a medium-density flat slab of resin-bound wood chips which has extensive use as a plywood-core stock for furniture panels, and as sheathing, roofing, and linoleum underlay in the building industry. 1 flowsheet and 6 illustrations. E.S.

BOARD—COATED

Schmidt Lithograph Company, *San Francisco.* Color coating on kraft . . . Boxboard Containers 71, no. 729: 24-5 (September, 1953).

The company is employing a color-coating technique for corrugated board, the process giving a uniformly colored smooth surface for subsequent printing. Details of the formula were not released, but basic ingredients contain clay-coating compounds and basic pigments. The coating is applied to roll stock in a separate operation before the liner medium is combined on the corrugator. 4 illustrations. R.A.S.

BOARD—STATISTICS

Neubrech, W. LeRoy, and Fibre Containers. Paperboard mill industry statistics. Fibre Containers 38, no. 8: 128, 130, 132, 134, 136, 138, 140, 145-6, 148 (August, 1953); *cf.* B.I.P.C. 23: 86.

The economic cycle experienced in the paperboard industry in the past two years (greatest full-scale production in September, 1950 to Spring, 1951, then a sudden drop in consumption) is discussed; reasons for the situation are given, and a monthly check of data is suggested as a possible remedy for the re-occurrence of the cycle. These data should include inventories of paperboard, unused paperboard boxes, and such boxes in channels of distribution from both wholesalers and retailers. With this information in the hands of businessmen, they should exercise restraint and eliminate "scare-buying." Paperboard mill production declined 7% from 1951 and 1% from 1950, a total of 11,084,100 tons being produced in 1952. Of the types of board, containerboard decreased 9% below 1951, folding boxboard 7%, and setup boxboard and other types 6%, whereas special foodboards increased 7%. Only Fourdrinier kraft liner and semichemical corrugating medium in the containerboard group came near to matching the growth of the special foodboards. Average annual containerboard prices per ton stayed the same as during 1951, except for .016 jute liner which decreased from $114.25 to 94.13, and .009 chipboard, from $124.90 to 97.19. 19 tables and 10 graphs. R.A.S.

BOARD MILLS

Stephenson, J. N., and Turner, John S. Hinde & Dauch. Pulp Paper Mag. Can. 54, no. 9: 80-92 (August, 1953).

The 44-year history of Hinde and Dauch Paper Company of Canada Limited is outlined; equipment and facilities at each of the company's five mills is described—one paper and one board mill at Toronto, Ont., a strawboard mill at Trenton, Ont., and corrugated box plants at Montreal, Que., and Chatham, Ont. 14 illustrations of the mills and equipment. R.A.S.

BOARD SPECIALTIES

Anon. Are you using display racks? Paper Sales 13, no. 9: 12-14 (September, 1953).

The advantages of self-service racks for displaying merchandise are described, including the reasons for their appeal. 14 illustrations. R.A.S.

Day, Frederick T. Paper conversion and usage. No. 50. Display outers. World's Paper Trade Rev. 140, no. 1: 34-5 (July 2, 1953); *cf.* B.I.P.C. 24: 41.

Cartons and similar productions designed to house and display products and the machinery used for this purpose are reviewed briefly. 4 illustrations. E.S.

BOARD TESTING—PHYSICAL

CRAIG, S. GORDON. Measurement of dimensional stability of insulation board. Tappi 36, no. 9: 166-9A (September, 1953).

The standard test for the linear expansion as given in Federal Specification LLL-F-321b-9 has been found by experience to be inadequate and in need of revision. A new method is described for which greater accuracy and better reproducibility are claimed. It calls for more precise sample-cutting, measuring, and processing facilities and specifies more extensive conditioning and measuring of samples. The results obtained by the two methods are compared. 3 tables and 3 figures. E.S.

NIXON, G. D. Suitability of lodgepole pine for dry-formed hardboard. Oregon Forest Products Lab. (Corvallis) Rept. no. L-3: 26 p. + 2 plates (August, 1953).

The report represents the results of testing 114 screen-backed lodgepole-pine boards, 0.25 inch thick. Modulus of rupture, water absorption, and specific gravity test values were statistically analyzed to determine the important effects caused by the variables under study. Chips which had been steamed prior to grinding produced a fiber which, under the same conditions, made stronger boards than did fiber ground from raw chips and appeared to make more efficient use of a wax emulsion added to improve water resistance. Water absorption was definitely reduced by pH control of the fiber-additive mixture, although the strength of the boards usually decreased also, depending on the additives used. An increase of press temperature from 320 to 400°F. generally improved board strength, but any increase in water resistance was dependent on the additives used. Waxes proved to be better than rosin sizes as waterproofing agents. By selecting the proper additives and operating conditions, experimental lodgepole hardboard with acceptable properties can be made; the wood offers a promising new source of raw material for the manufacture of dry-formed hardboard. 14 tables, 2 figures, and 9 references. R.A.S.

STILLINGER, J. R., and JOHNSON, J. W. Effect of specimen size and shape on percentage water absorption in ten different types of commercial hardwoods. J. Forest Products Research Soc. 3, no. 2: 66-9 (June, 1953).

Ten different types of commercial hardboards were tested for the effect of test-specimen size and shape upon percentage water absorption in a 24-hour water absorption test. The sizes and shapes included within the scope of the study were: 12 by 12 inch, 6 by 6 inch, 3 by 3 inch, 4 by 9 inch, and two sets of 3 by 12 inch. The latter two sets were included to study possible directional properties. In all, 1800 observations were made. The final conclusion ensuing from the analysis of the test results is that any specimen size having a surface area of 72 sq. in. (face plus back) between the limits 3 by 12 inch and 6 by 6 inch could be used on both treated and untreated hardboards in nominal thicknesses of ⅛ and ¼ inch. In most cases it is not necessary to consider machine direction when a shape other than a square is used. The test results suggest the advisability of considering changing the present tentative ASTM Designation: D 1037-52 T covering the water absorption test. 4 tables and 3 figures. E.S.

CARBOHYDRATES

ISBELL, HORACE S., and FRUSH, HARRIET L. Chemistry of the carbohydrates. Ann. Rev. Biochem. 22: 107-24 (1953).

The authors review methods for the separation of carbohydrates and carbohydrate derivatives, the application of C^{14} tracer techniques, transglycosidation, dextran, and reaction mechanisms, as published principally in the literature for 1950-December, 1952. 1 table, 6 figures, and 162 references. E.S.

CELLULOSE

KENNER, J., JONES, D. W., and SHARPLES, A. Cellulose textile chemistry. Repts. Progr. Appl. Chem. 37: 723-43 (1952); *cf.* B.I.P.C. 23: 130.

Each of the three authors discusses a different topic in this field. The first author reviews various modes of formation of oxycelluloses and their reactivity; the second, the evidence for the molecular structure in the ordered regions of cellulose; and the third, the form of polymer molecules in solution, their structure in the solid state, the nature of the crystallites, and the microfibrillar structure of cellulose. 201 references. R.A.S.

SHARPLES, A. "Weak bonds" in cotton cellulose. Chemistry & Industry no. 33: 870-1 (Aug. 15, 1953).

A kinetic study of the heterogeneous hydrolysis of cotton cellulose, of the same cellulose regenerated from dilute alkaline solutions, and of cellopentaose leads the author to the following conclusions. Weak links of the types proposed by Schulz (*cf.* B.I.P.C. 18: 821) and Pacsu (*cf.* B.I.P.C. 18: 358-9) do not exist in cotton cellulose, but a limited number (about 1 in 670) of extremely acid-sensitive linkages (10,000 times as active as the normal bond) can be formed by alkaline oxidation. The detection of abnormal linkages in cotton cellulose is made difficult by the fact that 90% of them are protected by their occurrence in the inaccessible regions. 4 references.
K.W., Jr.

CELLULOSE—DERIVATIVES

BORGIN, K., and JOHNSON, P. The spreading of cellulose derivatives. Trans. Faraday Soc. 49, no. 8: 956-67 (August, 1953).

The spreading of cellulose derivatives at the air-water interface has been examined and it has been confirmed that, whereas ethylcellulose spreads readily and almost completely on water, cellulose acetate and nitrate spread very imperfectly. Limited increases in area per glucose unit for the acetate were obtained by removal of incompletely dispersed aggregates, by spreading from dilute solution, by varying the solvent, and by use of sodium hydroxide, hydrochloric acid, or salts in the substrate. On solutions of urea and guanidine hydrochloride (I), ethylcellulose gives a slightly increased area per glucose unit, but cellulose acetate and nitrate give areas up to 80% and 190% greater than on water. With increasing acetyl content, the increase observed decreases and it appears that the effect of urea and (I) is chiefly to break hydrogen bonds, allowing more complete dispersion and spreading. It seems unlikely that complex formation alone is responsible for much of the area increase observed, though it may be involved in achieving dispersion. The areas observed are in conformity with the view that the repeating glucose units lie flat in the water surface. Certain acetate samples gave low areas even on urea and (I) solution which indicated the occurrence of stable cross links between the molecular chains. Exposure of acetates to certain bivalent

metallic salts and to formaldehyde were shown to cause a decrease in area which resisted the effect of (I); some such links may be involved in commercial material. 5 tables, 12 figures, and 18 references. E.S.

CELLULOSE—HEMICELLULOSE

BANDEL, WERNER. Chromatographic investigations of hemicelluloses in beech sulfite pulps. Das Papier 7, no. 15/16: 306-9 (August, 1953). [In German; English and French summaries]

Quantitative chromatography of dissolving pulps for viscose shows the hemicelluloses (soluble in 18% sodium hydroxide) to consist of roughly 40% glucose, 10% mannose, and 50% xylose, although there is considerable variation about this mean. Analyses of liquors and alkali-cellulose at various stages in the process indicate that during the aging of the alkali-cellulose, the percentage of xylose increases at the expense of the other two. Dry heating of pulp, on the other hand, increases the glucose in the alkali-soluble portion (probably through breakdown of cellulose). If the hemicelluloses are separated into β- and γ-celluloses, it is found that β-cellulose contains less xylan than γ-cellulose, but about the same percentage of mannan. By chromatography it was possible to fractionate the γ-cellulose (which is about ⅔ the amount of the β-cellulose) according to chain length and to obtain clear spots up to a D.P. of 8. 1 table, 7 figures, and 7 references. K.W.,Jr.

CELLULOSE—HYDROCELLULOSE

BATTISTA, O. A., HOWSMON, J. A., and COPPICK, SYDNEY. Hydrocellulose water flow number; relationship to fine structures of fibers, particularly fiber orientation. Ind. Eng. Chem. 45, no. 9: 2107-12 (September, 1953).

In the course of work on the measurement of hydrolysis-resistant residues of cellulose, it was observed that water could be filtered through residues from samples having high original fiber orientation faster than through residues prepared in an identical manner from samples having low original orientation. The hydrocellulose water-flow number (time in seconds required to draw 100 ml. of distilled water at 25°C. through a hydrocellulose residue collected on a calibrated sintered glass thimble) was developed to put these qualitative observations on a quantitative basis. A relationship between original fiber orientation and the hydrocellulose water-flow number has been proved, using seven different sets of rayon samples of known histories, each set of samples varying progressively in orientation. The relationship has been substantiated by two independent and well-recognized methods of measuring fiber orientation—x-ray diffraction and linear swelling. Other factors that affect cellulose fine structure (mechanical treatment, prehydrolysis, salt test, etc.) have also been characterized in terms of the hydrocellulose water-flow number. The test should serve as a valuable supplement to methods already in use. It is an easy and rapid measurement and can be made part of a conventional procedure for the measurement of hydrolysis-resistant cellulose and level-off basic D.P.'s. It should prove especially useful for following changes in fiber orientation in samples of known histories. 11 tables, 6 figures, and 10 references. E.S.

CELLULOSE—REACTIVITY

DÖHLE, WOLFGANG. Hornified cellulosic materials. Chem.-Ztg. 77, no. 12: 405-10 (June 20, 1953). [In German; English, French, and Italian summaries]

Hornification of cellulose is the phenomenon of inactivation which takes place when cellulose is overdried. It is caused by the formation of hydrogen bonds between hydroxyls of neighboring cellulose chains which in the wet state were combined with water molecules. Hornified cellulose can be reactivated (toward acetylation, for instance) by rewetting and removal of water by solvent exchange. In active celluloses of this type, considerable solvent is retained by the cellulose and cannot be removed even when dried for days under high vacuum at 100°C. (inclusion compounds). 8 tables, 5 figures, and 10 footnotes. K.W.,Jr.

CELLULOSE—VISCO-ELASTICITY

NIMER, E. L., LASATER, J. A., and EYRING, H. Mechanical properties of cotton fibers. Part III. Effect of alkali hydroxide on fibers under tension. Textile Research J. 23, no. 9: 629-39 (September, 1953); *cf.* B.I.P.C. 23: 876-7.

Stress-relaxation curves were obtained for wet cotton fibers under tension acted upon by lithium, sodium, and potassium hydroxide. Characteristically, there is instantaneous relaxation on the addition of alkali which gradually slows down; the fiber is then re-elongated (to a slightly higher stress than in the original wet tension) and the relaxation curve is measured. The relative force reduction (instantaneous force relaxation divided by stress in fiber just before alkali addition) decreases in the order: potassium, sodium, lithium. This is the increase order of the degree of hydration of the cations; i.e., the more the alkali ion is hydrated, the less it is able to penetrate the fiber structure. The limiting value of the relative force reduction as the alkali hydroxide concentration increases is 1. If the previous interpretation of this relative form reduction as a measure of accessibility is correct, it means that the entire fiber is accessible to the alkali, which is not in agreement with x-ray studies. 12 tables, 11 figures, and 9 references. K.W.,Jr.

CELLULOSE ESTERS

REID, E. EMMET. Esterification. Ind. Eng. Chem. 45, no. 9: 1936-43 (September, 1953).

This general review of the recent literature on esterification contains a section (p. 1940) on cellulose. 3 illustrations and 284 references. E.S.

CHEMICAL TESTING—BLACK LIQUOR

BRYDEN, W. E., *and others.* Ultimate analysis of black liquor. Tappi 36, no. 9: 169-72A (September, 1953).

In a letter to the Editor of *Tappi,* information is sought regarding methods for the ultimate analysis of black liquor for which TAPPI Standard Method T 625 m-44 is not satisfactory. Several suggestions from readers are appended. 1 table. E.S.

CHEMICAL TESTING—OXYCELLULOSE

NABAR, G. M., and PADMANABHAN, C. V. Estimation of free aldehyde groups in oxycelluloses. J. Soc. Dyers Colourists 69, no. 8: 295-7 (August, 1953).

In this suggested method, the oxycellulose is treated with sodium chlorite to oxidize aldehyde groups to carboxyls. The increase in carboxyl content represents the amount of aldehyde groups in the original oxycellulose. The decrease in copper number brought about by the chlorite oxidation taken in

conjunction with the aldehyde content makes it possible to calculate the copper equivalent of the aldehyde group. This is found to be 6.19 for a series of periodic acid oxycelluloses and 15.83 for a series of dichromate oxycelluloses. The authors believe this difference to result from the position of the aldehyde group in the anhydroglucose unit and suggest that the method may be used to determine this as well as the proportion of aldehyde groups. 1 table and 18 references. K.W.,Jr.

CHEMICAL TESTING—PULP—PENTOSANS

GRAN, G. A suggestion for improving the Kullgren-Tydén apparatus for the determination of pentosans. Svensk Papperstidn. 56, no. 16: 640 (Aug. 31, 1953). [In Swedish]

A ball and socket ground glass joint between distillation pipe and condenser was found to reduce breakage of the glass apparatus used for pentosan determinations at the Swedish Forest Products Laboratory. 1 diagram. E.S.

SMITH, EDGAR D., and ROGERS, L. N. Determination of pentosans in highly purified wood pulps. I. Furfural analysis methods. Tappi 36, no. 9: 390-2 (September, 1953).

All existing pentosan-analysis methods are theoretically not sufficiently accurate when applied to highly purified cellulose pulps having pentosan contents of about 1% or less. This is primarily the result of their use of macroanalysis methods for the estimation of the microquantities of furfural produced by the acid distillation of the pulps. A micromethod for the specific analysis of furfural is presently available employing aniline acetate. The authors describe the development of a highly sensitive and precise method for the analysis of furfural plus hydroxymethyl furfural which makes use of the similar ultraviolet absorption properties of these materials. The method is much faster and easier to use than any total aldehyde method now in use and requires only a fraction of the distillates. Tests on typical pentosan distillates have shown it to be considerably more precise than the TAPPI Standard T 223 m-48 bromate titration procedure. 3 tables, 1 figure, and 4 references. E.S.

CHEMICAL TESTING—WASTE LIQUOR

PHILLIPS, J. H., and RUBRIGHT, M. M. The determination of total nonaqueous constituents in pulp mill liquors. Part II. Application to all types of residual pulping liquors. Tappi 36, no. 9: 392-401 (September, 1953); *cf.* B.I.P.C. 22: 170.

A method for the determination of total water content, and by calculation, the total nonaqueous constituents in pulp mill residual liquors is described. This method, described in the reference, was reported at that time preferable to existing methods for analyzing magnesium bisulfite residual liquors and has now been found applicable for determining moisture in all types of residual pulping liquors. The method employs the two-solution modification of the well-known Karl Fischer titration and gives rapid and reproducible results with a greater accuracy than oven-drying methods. A determination can be completed in a few minutes in contrast to the time-consuming oven-drying methods. 9 tables, 8 figures, and 13 references. E.S.

CHLORINE

SANDERS, HOWARD J., GARDINER, WILLIAM C., and WOOD,

JOSEPH L. Mercury cell chlorine and caustic. Ind. Eng. Chem. 45, no. 9: 1824-35 (September, 1953).

A detailed description of the electrolytic chlorine and caustic soda plant of the Mathieson Alabama Chemical Corp. at McIntosh, Ala. is given; it employs the Mathieson mercury cell process, has a daily capacity for 110 tons/day of chlorine, and supplies chlorine and caustic to companies manufacturing kraft paper, insecticides, rayon, and many other products. Located near the McIntosh salt dome, the plant obtains its principal raw material from the underground salt deposit. After passage through the mercury cells, the depleted brine is pumped back into the salt dome for saturation. This is the only chlor-alkali plant in the United States which produces saturated brine in this fashion. Typical of mercury-cell installations, the caustic is produced with a minimum of contaminating sodium chloride, so that it can be used directly in the production of rayon without further purification. The mercury cell process involving the formation of sodium amalgam can also be used successfully to produce a variety of compounds other than caustic soda. 6 tables, 2 flowsheets, 11 figures, and 49 references. E.S.

CHLORINE DIOXIDE

SCHUBER, JOHN, and KRASKE, W. A. New outlook for chlorine dioxide. Chem. Eng. 60, no. 9: 205-7 (September, 1953).

A brief outline of the Solvay method of chlorine dioxide manufacture is presented in which sodium chlorate in acid solution is reduced to chlorine dioxide with methanol in three reactors arranged in series; the operation is continuous. The chlorine dioxide is absorbed by water passing through two packed towers in parallel. The water solution falls to a receiver tank from which it is pumped to the bleach plant. Satisfactory materials of construction have been found, although the search for alternate materials continues. The installation in the bleach plant of the new sulfate mill of Riegel Carolina Corp. at Acme, N.C. is described briefly (*cf.* B.I.P.C. 23: 706). A design incorporating no gas loss was developed by Improved Machinery Corp. of Nashua, N.H. Although chlorine dioxide was originally considered a high-cost super bleach to be used only for high-quality products, experience has shown that, when used efficiently, it can be advantageous at any brightness level. It seems quite probable that future bleach plants will accomplish in four stages the bleaching which, without chlorine dioxide, requires now from five to eight stages. 1 table and 3 figures. E.S.

CHROMATOGRAPHY

NEWCOMBE, A. G., and REID, S. G. Chromatographic separation, using chemically treated paper, of aldehydes and ketones on the basis of their reactivity. Nature 172, no. 4375: 455-6 (Sept. 5, 1953).

Vanillin, acetovanillone, veratraldehyde, and acetoveratrone were effectively separated by spotting on paper previously sprayed with dilute sodium bisulfite solution and dried and developing with the organic phase produced by mixing 9 volumes of hexane, 1 volume of chloroform, and 10 volumes of water. Acetoveratrone had the highest R_f value followed, in order, by acetovanillone, veratraldehyde, and vanillin. The use of treated papers for other separations is discussed. 1 figure and 4 references. I.A.P.

COMPRESSION WOOD

WARDROP, A. B., and DADSWELL, H. E. The nature of reaction

wood. III. Cell division and cell-wall formation in conifer stems. Australian J. Sci. Research 5 B, no. 4: 385-98 + 4 plates (November, 1952); *cf.* B.I.P.C. 21: 236.

Cell division, the nature of extra-cambial readjustment, and the development of the secondary wall in the tracheids of conifer stems have been investigated in both compression wood and normal wood. It has been shown that the reduction in tracheid length, accompanying the development of compression wood and, in normal wood, increased radial growth after suppression, result from an increase in the number of anticlinal divisions in the cambium. From observations of bifurcated and otherwise distorted cell tips in mature tracheids, of small but distinct terminal canals connecting the lumen to the primary wall in the tips of mature tracheids, of the presence of only primary wall at the tips of partly differentiated tracheids, and from the failure to observe remnants of the parent primary walls at the ends of differentiating tracheids, it has been concluded that extra-cambial readjustment of developing cells proceeds by tip or intrusive growth. It has been further concluded that the development of the secondary wall is progressive toward the cell tips, on the bases of direct observation of secondary wall formation in developing tracheids and of the increase found in the number of turns of the micellar helix/cell with increasing cell length. The significance of this in relation to the submicroscopic organization of the cell wall is discussed. Results of x-ray examinations and of measurements of tracheid length in successive narrow tangential zones from the cambium into the xylem indicate that secondary-wall formation begins before the dimensional changes of differentiation are complete. 1 table, 35 figures, and 37 references. E.S.

CONTAINER INDUSTRY

GATES, JAMES E. The general picture. Fibre Containers 38, no. 8: 70-1, 73-4, 78, 80, 82, 84, 86, 88, 90, 92 (August, 1953); *cf.* B.I.P.C. 23: 93.

The general picture of 1952 in the paperboard industries is characterized by a decline in the production and consumption of all items, with the exception of foodboard mill production. This decrease, described as a slump which began in mid-1951 and from which there had been a substantial recovery by the middle of 1952, is in direct contrast to the general picture of the industry since 1929. Since that year the normal rise has averaged 4.25%/year, compounded, and the prediction for the coming year is estimated at the same rate, with 1.25% the result of new uses and 3%, increased demand brought about by increased production of nondurables. Listed as significant changes that have taken place in the industry in the last few years are self-sufficiency (formerly 20-25% of the pulp came from foreign sources), high mill-activity rates (84% for 1952), resurgence of jute, and large per capita consumer use (1.9 paperboard containers/day for the average person). Tables and graphs summarize statistical information on production, consumption, distribution, and value of raw materials, board or paper furnishes, various grades of boxboard and paperboard, and a comparison of board and paper covering principally 1952 but also representative earlier periods. 29 tables and 8 graphs. R.A.S.

CORROSION

KELLY, R. R. Protective coatings in paper and pulp mills. Paper Mill News 76, no. 34: 116-17 (Aug. 22, 1953); Can. Pulp Paper Ind. 6, no. 9: 34, 36, 52 (September, 1953).

The author discusses the correct uses and methods of application of plastic coatings (made from a series of synthetic resins) for protecting buildings

and equipment against extremely corrosive chemical industrial exposures. E.S.

SEYMOUR, RAYMOND B., and GABRIEL, GEORGE P. Solving corrosion problems in the paper industry with plastics. Paper Mill News 76, no. 34: 98, 100, 102, 108, 146 (Aug. 22, 1953).

The corrosion problems of the pulp and paper industry are similar to those in the chemical-process industries; hence, protective measures which have been successfully applied in the chemical industry should prove adequate for the solution of corrosion problems in the pulp and paper industry. The author reviews the possibilities of plastic coatings, and applications of membrane linings, chemical-resistant cements, all-plastic structures, floors, waste lines, digester cements, and chlorine dioxide bleaching systems. 1 illustration and 30 references. E.S.

COST—ACCOUNTING

VAN VOORHIS, ROBERT H. Better pulpwood costs for the small operator. Tappi 36, no. 9: 22A, 24A, 26A, 28A (September, 1953); Southern Pulp Paper Mfr. 16, no. 10A: 24, 26, 29-30 (Oct. 10, 1953).

The importance of forest economics and the development of cost accounting in forestry on the level of the small operator is stressed. The experiences of such a pulp producer are outlined, showing where cost data could have been used and how it might have improved this particular situation. 1 form for a daily operations report. R.A.S.

COTTON

DRAKE, GEORGE L., JR., REEVES, WILSON A., and GUTHRIE, JOHN D. Ethylenimine-treated cotton. Textile Research J. 23, no. 9: 639-41 (September, 1953).

Raw cotton fiber in the form of card sliver was treated in an evacuated oven with the vapor of ethylenimine. The ethylenimine polymerized in or on the fiber and enhanced its ability to be dyed with acid dyes, but apparently there was little true chemical combination between the imine and the cellulose. Fiber treated in this way, along with appropriate controls, was converted into fabric which was evaluated by various test methods. The results show that cotton may be treated with ethylenimine without adverse effect on the fabric made from it but, aside from changed dyeing characteristics, no outstanding property has yet been noted for ethylenimine-treated cotton. 2 tables and 9 references. E.S.

DISINFECTION AND DISINFECTANTS

CHEMICAL WEEK. Fungistat for oranges. Chem. Week 73, no. 6: 32 (Aug. 8, 1953).

Reference is made to the current trends for shipping citrus fruit unwrapped in fiberboard cartons with biphenyl (I) as a fungistat applied to a fiberboard collar placed around the inside of the container or to pads placed at the top or bottom. About 80% of all California lemons are now packed in this manner. Oranges are more susceptible to taste influence from (I) and, although the (I) used has masking agents in it, California orange growers have started a new program at the Riverside (Calif.) Citrus Experimental Station to find the ideal substitute; it will initially concentrate on the study of hormones such as 2,4-D and 2,4,5-T. One of the most promising substitutes is α-terpineol; however, it has the disadvantage common to many fungistats

that it is absorbed by the nearby fruit causing fruit burn, leaving the center of the box unprotected. 1 illustration. E.S.

ENGINEERING

McCARTHY, R. H. Organization for production engineering. Paper Mill News 76, no. 38: 96, 125 (Sept. 19, 1953).

The functions of the product-engineering and the technical-service departments of an organization, and the kind of engineering training required for these functions are discussed. R.A.S.

FERMENTATION PROCESS

PERLMAN, DAVID, TEMPEL, ARTHUR E., JR., and BROWN, WILLIAM E. Fermentation. Ind. Eng. Chem. 45, no. 9: 1944-69 (September, 1953); *cf.* B.I.P.C. 23: 96.

This general review of the recent literature of the fermentation process contains references on spent sulfite liquor and alcohol (p. 1946), yeast (p. 1949), enzymes, including amylase (p. 1950-1), and waste-disposal techniques (p. 1961-2) of possible interest to the pulp and paper industry. 669 references. E.S.

FIBER—DIMENSIONS

MONTGOMERY, D. J. Effect of stiffness and nonuniformity on vibroscopic determination of filament cross-sectional area. J. Appl. Phys. 24, no. 9: 1092-9 (September, 1953).

The presence of stiffness in a stretched string vibrating between fixed supports raises all the natural frequencies over those for a perfectly flexible string. The presence of nonuniformity in cross-sectional area along the string changes some or all of the frequencies from those for a perfectly uniform string, the amount and direction of change depending on the form of the nonuniformity. These changes in frequency may introduce error into the calculation of the average cross-sectional area of a fiber by means of the vibroscopic technique, wherein the mechanical resonance of a stretched fiber is observed under oscillating mechanical or electrostatic forces. In this paper the natural frequencies are calculated with both the stiffness and the nonuniformity taken into account to first-order terms. The relation between the average cross-sectional area and the natural frequencies is analyzed. Consideration is given to the manner in which the changes in frequency and shifts of the nodes, due to nonuniformity, determine the detailed form of the area variation. The characterization of nonuniformities in terms of certain arbitrary parameters is shown to lead to the possibility of calculating the average area by measuring the natural frequencies in only the first and second modes and of calculating the maximum or minimum area by measuring also the nodal shift in the second mode. 5 tables and 8 references. E.S.

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY. Fiber length and coarseness of pulp by projection. Tappi 36, no. 9: 121-3A (September, 1953).

The text of TAPPI Suggested Method T 232 sm-53 for the rapid and accurate determination of the length and coarseness of a fiber in a pulp by a projection method is presented. Apparatus and materials, test specimen, procedure, calculations, and method of reporting are described. 3 figures and 1 reference. E.S.

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY. Fiber length of pulp by classification. Tappi 36, no. 9: 125-6A (September, 1953).

The text of TAPPI Suggested Method T 233 sm-53 for measuring the weighted average fiber length of a pulp is presented. 5 references. E.S.

FIBER—IDENTIFICATION

LYNCH, E. M. Bibliography of fiber analysis (1948-53). Am. Dyestuff Reptr. 42, no. 18: P596 (Aug. 31, 1953).

A listing of 51 references (not annotated) on fiber identification is presented; synthetic fibers are principally covered. E.S.

NORWICK, BRAHAM. The rapid identification of fibers by the Christiansen effect. Textile Research J. 23, no. 4: 259-61 (April, 1953).

If a material is placed in a liquid having a similar refractive index but a higher dispersion, under certain conditions varying chromatic effects are visible to the naked eye (Christiansen effect). This effect with the addition of a small oblong of Polaroid placed in front of or behind the sample is used as the basis for a method of identifying textile fibers. 2 tables and 16 references. E.S.

FIBER—STRUCTURE

ALLEN, S. J. Fibre architecture with special reference to molecular constitution. J. Textile Inst. 44, no. 8: P286-304; discussion: P304-6 (August, 1953).

The author presents an account of fiber architecture from the point of view of the polymer chemist. The latest developments in fiber science, such as the idea of compliance to explain such elusive properties as draping quality, handle, and resistance to wear are discussed in considerable detail. The possibilities regarding the production in the future of segmented polymer fibers closely imitating wool and silk are outlined. 3 tables, 13 figures, and 27 references. E.S.

FIBERS

HAMBURGER, WALTER J., and PLATT, MILTON M. An engineering approach to the analysis and design of textile structures. J. Textile Inst. 44, no. 8: P475-510; discussion: P510-13 (August, 1953).

The authors present factors pertinent to a scientific and engineering approach to the analysis and design of textile products to meet certain functional performance requirements. They discuss molecular structure *vs.* mechanical properties (structural order as related to load elongation properties of cellulose acetate and cellulose fibers, effects of varying structural order on sonic moduli, effects of cold drawing on the modulus of nylon, and effects of chemical treatments on stress-strain properties of hair), analysis of stress-strain curves (fibers), stress analysis of yarns (effects of yarn geometry on stress-strain characteristics), and stress analysis of fabric structures (crease-resistance and fiber bending and resistance to abrasion). 3 tables, 26 figures, and 39 references. E.S.

FILTRATION

GRACE, H. P. Resistance and compressibility of filter cakes. Parts I-III. Chem. Eng. Progr. 49, no. 6: 303-18; no. 7: 367-77; no. 8: 427-36 (June-August, 1953).

Part I. The experimental application of a compression-permeability technique for studying the filtration properties of compressible cakes is described. Seventeen materials of subsieve and submicron ultimate particle size (including Solka Floc) were examined, and data on cake resistance, porosity, compressibility, and specific surface were correlated over a pressure range of from 1 to 2700 p.s.i. The application of the Kozeny-Carman relationship is considered, and the limitation of the relationship is discussed where particle flocculation is a factor. Part II: *Under conditions of constant-pressure filtration.* Methods for interpreting compression-permeability data in terms of actual pressure filtrations are applied to the prediction of cake-resistance values for 10 materials. The predicted values agree within ± 10% with values determined in filtrations over a range of pressure drop from 10 to 450 p.s.i. The controlling role of particle flocculation with compressible cakes is discussed through the application of microscopic and light-transmission techniques for characterizing the degree of flocculation and the correlation of degree of flocculation with filtration resistance of filter cakes. The utility of the compression-permeability method in sizing commercial filters is discussed. Part III: *Under conditions of centrifugal filtration.* The interpretation of compression-permeability data in terms of centrifugal filtration is considered and a simplified centrifugal-rate equation is developed. Values of filtration resistance are compared for two materials with predicted values from compression-permeability data and values determined by constant-pressure filtration. Inherent difficulties in the sizing of centrifugal filters are considered and shortcomings of the methods now in use are analyzed. 6 tables, 60 figures, and 79 references. W.L.I.

TILLER, F. M. The role of porosity in filtration; numerical methods for constant rate and constant pressure filtration based on Kozeny's law. Chem. Eng. Progr. 49, no. 9: 467-79; discussion: 479 (September, 1953).

Based upon the Kozeny law relating the rate of flow to the porosity, a method has been developed for determining (*a*) the pressure drop *vs.* the depth and the flow rate *vs.* the applied pressure in a fixed bed of solids, (*b*) the pressure *vs.* time relationship in constant-rate filtration, and (*c*) the volume *vs.* time relationship in constant-pressure filtration. It is assumed that the porosity is solely a function of the pressure on the solids, thus eliminating solids such as certain naturally occurring clays in which application of pressure causes only a slow approach to the equilibrium porosity. Experimental porosity *vs.* pressure data are presented for such materials as kaolin, calcium carbonate, carbon black (Suchar), diatomaceous earth (Hyflo), asbestos, and mixtures of these materials. As a satisfactory approximation, the percentage of voids can be related to the pressure by a power function with powers ranging from 0.01 to 0.05 for applied pressures up to 100 lb./sq. in. 6 tables, 17 figures, and 12 references. E.S.

FOLDING BOXES

LILLIE, A. R., and FIBRE CONTAINERS. Folding carton industry statistics. Fibre Containers 38, no. 8: 176, 178, 180, 182, 184, 186, 188, 190, 192, 194, 196 (August, 1953); *cf.* B.I.P.C. 23: 99.

The year 1952 saw the leveling off and the downward trend in the produc-

tion of folding cartons. In the first quarter of 1952 the volume decreased to $155 million as compared with $190 million in 1951. Nevertheless, the dollar-volume levels for the industry were still well above all previous years except 1951. The special foodboards, which as far as folding cartons is concerned cover cold-water paraffined cartons, paperboard pails, frozen-food containers, and the Ex-Cell-O-style milk carton, are enjoying a huge growth over the past 10 years. The industry is urged to take advantage of this field, as well as the fields of prepackaging and bottle carriers. Statistics covering the industry include separate figures for the industry with and without the inclusion of the special foodboards. A map of the United States gives the various folding-carton zones; an increase of 3% in capacity growth shows the greatest percentage in the Southwestern, Pacific, and Missouri Valley zones. 18 tables, 7 graphs, and 1 map. R.A.S.

FORESTS AND FORESTRY

AMIDON, G. B. Administration of silvicultural projects on company owned lands. Pulpwood Annual: 42-4, 46-7 (1953); *cf.* B.I.P.C. 23: 328.

The author discusses the problems of the Minnesota and Ontario Paper Co. in developing sustained-yield cutting units, with particular reference to the preponderance of mature and overmature wood. 5 illustrations. E.S.

GRAVES, PAUL F. Organization of pulp and paper company forests. Pulpwood Annual: 36-40 (1953).

The paper deals briefly with the broader aspects of administrative organization and management of pulp and paper company forests and woodlands activities, including the acquisition and use of company forest lands and wood procurement and related forestry efforts on noncompany lands. The decentralized territorial method of control of the woodlands resource is becoming more prominent. 4 charts. E.S.

MCCAFFREY, J. E. [Moderator] Correlation of pulpwood from company forests with mill requirements. Pulpwood Annual: 47-8, 50 (1953).

A digest of a panel discussion is presented, in which the current situation, the situation 10 years hence, and a long-range program are reviewed. N. T. Barron, A. C. Shaw, J. B. Millar, and William Hilton participated. E.S.

GRAPHITE

THOMSON, A. G. Carbon heat exchangers. World's Paper Trade Rev. 140, no. 4: 259-60 (July 23, 1953).

Different types of graphite heat exchangers (tube-bundle type, Carbinert cascade coolers, plate-heater type, and bayonet-heater type) manufactured by the Morgan Crucible Co., Ltd., London and possible applications are described. The Carbinert grade of impervious graphite has exceptional corrosion resistance and a high rate of heat transfer. 3 illustrations. E.S.

GROUNDWOOD MILLS

FAEGRE, ROBERT. First details on Fort Frances mill modernization. Paper Trade J. 137, no. 11: 22-3 (Sept. 11, 1953); Paper Ind. 35, no. 7: 765 (October, 1953).

Improvements in grinder-room and power facilities at the Fort Frances Division of Ontario-Minnesota Pulp and Paper Co., Ltd., part of the company's $5 million modernization project, are described. The facilities are

expected to provide an increase of 75 tons of pulp/day and permit greater flexibility and efficiency. 1 map. R.A.S.

GUMS AND RESINS

HIRST, E. L., and DUNSTAN, SONIA. The structure of karaya gum (*Cochlospermum gossypium*). J. Chem. Soc.: 2332-7 (August, 1953).

Karaya gum, from *Cochlospermum gossypium*, is a partly acetylated acidic polysaccharide, which gives on hydrolysis equimolecular proportions of L-rhamnose, D-galactose, and D-galacturonic acid, together with traces of a ketohexose. On partial hydrolysis, it gives rhamnose, galactose, galacturonic acid, 2-D-galacturonosyl-L-rhamnose, and 4-D-galacturonosyl-D-galactose, together with unidentified oligosaccharides of high uronic acid content. Methylated karaya gum gives on hydrolysis 2,3,4-trimethyl (one part), 3,4-dimethyl (one part), and 3-methyl rhamnose (one part), 2,3,4,6-tetramethyl (two parts), 2,3,6-trimethyl (one part), and 2,6-dimethyl galactose (about 1%), and a mixture of methylated uronic acids. The oxidation of the deacetylated polysaccharide with periodic acid has been studied. 1 table. E.S.

HISTORY

ANON. Paper trade agreements aren't new—America's first was penned in 1795! Pulp Paper Mag. Can. 54, no. 9: 109-10 (August, 1953).

The minutes of the Boston conference, recognized as the first recorded trade agreement in the American paper trade as to prices and other trade conditions, are given. A biography of Isaiah Thomas, of whose collection the original document is a part, is sketched briefly. R.A.S.

CLAPPERTON, R. H. The history of papermaking in England. Paper Maker [U. S.] 22, no. 2: 8-22 + 1 insert (September, 1953).

Recognized as important figures in the early history of papermaking in England are John Tate, who established the first English paper mill about 1490; John Spilman, who set up a mill at Dartford, Kent in 1588; Robert Heyricke, important in the beginning of the 17th century; Henry Portal, entrusted with the privilege of making bank notes; Joseph and John Portal, descendents of Henry who carried on and extended the business; and James Whatman, son James, and William Balston, known as manufacturers of exceptionally good papers. 16 illustrations. R.A.S.

ELLIOTT, HARRISON. The first paper mill in New York. Paper Maker [U. S.] 22, no. 2: 25-30 (September, 1953).

New York's first paper mill began to operate in 1768, under the direction of John Keating. Historical evidences are cited which give the original location of the mill as Queen Street, later moved to Peekskill. Advertisements of the mill for rags as raw material are reproduced. 3 illustrations. R.A.S.

GILLIS, STANLEY J. Sir John Spilman . . . paper maker. Paper & Print 26, no. 2: 154-5 (Summer, 1953).

A brief biography of John Spilman, called the best known of the old papermakers of England, is presented. A poem by Thomas Churchyard referring to Spilman and his paper mill and credited with making him well known, is reprinted; his colored alabaster tomb and watermark (the letters "E.R.",

surmounted by a crown) are described. 1 illustration and 3 footnotes. R.A.S.

VOORN, HENK. Emperor of all Russia; papermaker. Paper Maker [U. S.] 22, no. 2: 33-6 (September, 1953).

Two Dutch paper mills, "De Kok" and "De Walvis", are considered important as the sites visited by Peter the Great, czar of Russia, in his search for practical knowledge of the Dutch methods of papermaking and skilled workers for his Russian mills. The history of the two Dutch mills is also sketched briefly. 2 portraits of Peter the Great. R.A.S.

HUMIDITY

BURCHAM, J. N. A variable temperature and humidity oven. J. Sci. Instr. 30, no. 9: 335-6 (September, 1953).

A new oven which enables the elastic properties of wood to be studied over the temperature range of 30 to 100°C. and the R.H. range of 30 to 95%, constructed by the Forest Products Research Laboratory, Princes Risborough, Bucks., England is described. Humidity control is achieved by saturating air with water vapor at a known temperature and then heating the saturated air to a higher temperature. The relative humidity is given by the ratio of the saturation vapor pressure of water at the lower and higher temperature. 1 table, 2 figures, and 6 references. E.S.

INSTRUMENTATION

AIKEN, WILLIAM H. What the papermaker and converter would like to see measured and controlled. Tappi 36, no. 9: 133-6A (September, 1953).

Following a brief discussion on employee relations in introducing an instrumentation program, the author mentions some of the desirable points for instrumentation in a board mill (degree of refining of stock, bending quality of folding boxboard, wet-end tension control, bonding strength of plies, weight distribution across plies in a cylinder sheet, brightness, color, degree, printability, and color control in printing) and emphasizes the need for accurate instruments. One of the retarding factors to instrumentation in the industry has been that too many inaccurate instruments have been supplied. E.S.

EHRISMAN, H. O. The instrument manufacturer's problems in meeting the demands of the papermaking and converting industries. Tappi 36, no. 9: 138-41 (September, 1953); Paper Mill News 76, no. 42: 127-8, 130 (Oct. 17, 1953).

The instrument manufacturer's sales organization must be made up of highly specialized engineering personnel which is not only familiar with the technical aspects of his instruments, but has a working knowledge of industrial processes, processing equipment, and the applications of the instruments essential for best results, so that customers may have expert assistance to develop the widest and most effective use of instrumentation. Examples are given to show that frequently, when instruments fail to work properly, the trouble rests not in the instrument but in the associated process equipment. The need for instrumentation to all process variables is emphasized; only limited results are possible from the application of an instrument at the tail-end of a process in the hope that it will serve as a miraculous cure-all and will correct all upsets of process variables preceding it. E.S.

GREEN, JOHN R. Instrumentation used in other industries which might be applied to paper manufacturing. Tappi 36, no. 9: 141-7A (September, 1953).

The author first reviews briefly some of the presently available industrial instruments and control systems used in the beneficiation of minerals which might be applied in the pulp and paper industry; this is followed by a discussion of control principles employed in other industries. 19 figures. E.S.

LEFKOWITZ, IRVING. Some aspects of instrumentation in the distilling industry. Tappi 36, no. 9: 147-50A (September, 1953).

The author describes the instruments and control systems employed in the processing of beverage spirits during the three principal phases: conversion of the starches in various grains to ethyl alcohol, concentration and purification of the alcohol product, and recovery of the by-products. 3 diagrams. E.S.

LLOYD, S. C., JR. Instrumentation from management's viewpoint. Tappi 36, no. 9: 136-8A (September, 1953); Paper Mill News 76, no. 42: 46, 48, 94 (Oct. 17, 1953).

Management in most modern industrial concerns has come to recognize instrumentation as a vital part of plant equipment. Its uses are rapidly expanding and offer excellent returns in safety, quality, efficiency, and production. Management also recognizes that it must develop the necessary personnel to insure that the instrumentation investment is wisely made and maintained in a reliable manner. E.S.

P.A.M. LIMITED, *Merrow, Guildford, England.* TEM-CON systems of humidity and temperature control. World's Paper Trade Rev. 140, no. 8: 556 (Aug. 20, 1953).

The TEM-CON humidity-sensitive element and amplifier and TEM-CON temperature-sensitive elements (hygroscopic and radiation types) and electronic relays and their mode of operation are described briefly. 2 illustrations. E.S.

PETERS, RALPH W., and HUSTON, BRUCE W. Some practical applications of measurement and control instruments in a paper mill. Tappi 36, no. 9: 127-33A (September, 1953); Paper Mill News 76, no. 42: 86, 88-9, 92, 96, 100 (Oct. 17, 1953).

The author describes some unusual applications of instruments developed at the Paper Mills Division of Eastman Kodak Co., including automatic measuring of water in batch make-up operation, stock distribution systems, level controls, the automatic measuring and addition of chemicals (size in particular), consistency control, stockgate control, an automatic jordan shutdown, press and calender loading, and a drying control system. 15 figures. E.S.

TRENSCHEL, RUDOLF. Testing and control in the American pulp and paper industry. Das Papier 7, no. 15/16: 293-8 (August, 1953). [In German; English and French summaries]

Typical examples are given of the variety of testing methods and operation controls applied in the digester house, groundwood mills, and paper-machine rooms of the pulp and paper industry in the United States. 14 figures. E.S.

INVENTORIES

SOMERS, FRANK. Effective inventory policies and practices. Parts I and II. Am. Paper Merchant 50, no. 6: 14-15; no. 8: 20, 57 (June, August, 1953).

Stating that improper control of inventory can result in a loss in profit for paper wholesalers through failure to pinpoint operational expenses, the author advocates a program for efficient control. He suggests a monthly listing of stock, price markdowns, and merchandise spoilage to form a perpetual inventory so that tax, storage, and insurance fees are determined more accurately. This listing can also serve as a basis for eliminating unprofitable items and overloading of the warehouse. R.A.S.

LIGNIN

GILBERT, EVERETT E., and JONES, E. PAUL. Sulfonation and sulfation. Ind. Eng. Chem. 45, no. 9: 2041-64 (September, 1953).

In a general review on this subject, a special section (p. 2054-5) is devoted to the sulfonation of lignin. 22 references in the lignin section covering the period 1950-52. E.S.

HARRIS, ELWIN E. A lignin-carbohydrate bond in wood. Tappi 36, no. 9: 402-5 (September, 1953).

The outstanding evidence for and against a lignin-carbohydrate bond in wood is reviewed. When attempts were made at the Forest Products Laboratory to fractionate wood into carbohydrate and lignin by grinding and sifting, lignin was concentrated in the very fine powder, but all fractions contained substantial quantities of lignin. Wood of maple, aspen, and spruce was treated with methanol and hydrochloric acid under conditions similar to those used to study the reactive chemical groups in native and purified cellulose. A large part of the hemicellulose dissolved. About 70% of the lignin in the hardwoods and 24% in the spruce dissolved in 20 volumes of methanol in 48 hours. Treatment of wood with a 17.5% solution of alkali dissolved the hemicellulose of wood and made about 70% of the lignin in the hardwoods and about 30% of the lignin in the spruce soluble in methanol after removal and neutralization of the alkali. 3 tables and 35 references. E.S.

LUBRICATION AND LUBRICANTS

BREWER, A. F. Lubrication of chain drives. Paper Mill News 76, no. 34: 78, 80-1, 83, 85-6 (Aug. 22, 1953).

The author discusses the various types of chain design as related to lubrication, including detachable, pintle, roller, and silent chains, and the methods by which effective lubrication can be maintained. 22 figures. E.S.

MACHINERY

BELL, G. E. The use of sawmill waste for pulp in eastern Canada. Can. Dept. Resources and Develop. Forestry Branch. Forest Products Labs. Div. Bull. no. 108: 48 p. (1953); *cf.* B.I.P.C. 23: 29.

The report covers research carried out by the Research Co-ordinating Committee on the Utilization of Sawmill Waste for Pulpwood on the various phases of the utilization of slabwood and edgings for the manufacture of pulp. Three advance reports have been revised and combined with additional information to form the report. Information included covers barkers (cutting knives, rubbing friction, hydraulic erosion, thermopressure, air-float method of bark separation, and Centri-Cleaner), chippers, and handling and trans-

portation (volumes; weights; rail, trailer, truck, and water transportation; and handling). Various makes of barkers and chippers are analyzed according to capacity, operation, and use on whole logs, slabs, and pulp bolts, poles, and piles. 2 tables and 58 illustrations. R.A.S.

METALOCK (BRITAIN) LTD., *London, England.* "Metal surgery" redeems fractured machinery. Paper Making and Paper Selling 72, no. 2: 27-8 (Summer, 1953); *cf.* B.I.P.C. 22: 915.

Essentially the same description of the Metalock process for the cold repair of machinery fractures is given as in the previous reference. 3 figures. E.S.

PAPER TRADE JOURNAL. New equipment and supplies review. Paper Trade J. 137, no. 12: 81, 83-4, 86, 88, 90, 92-4, 96-100, 104, 106, 108, 110-11, 113-18, 120, 122-3, 125-8, 131-44, 146-7, 149-51, 154, 156-8, 160, 162, 164-79, 181-95 (Sept. 18, 1953).

The review is a collection of all the reports on equipment and supplies published in the periodical since the special Mill Equipment number in September of 1952. The reports are organized under the following headings: materials handling equipment, pulp mill machinery, stock preparation equipment, paper machine accessories, motors and power-transmission equipment, measurement and control instruments, new materials for the industry, pumps and valves, finishing and converting supplies, plant-maintenance aids, and miscellaneous supplies. Numerous figures. R.A.S.

SARLE, PERCY W. [Moderator] Pulp and paper mill maintenance. Paper Mill News 76, no. 34: 50, 126 (Aug. 22, 1953).

A report of a round-table discussion on maintenance problems of jordans, pipelines, and bearings in the pulp and paper industry is presented. E.S.

MACHINERY—BOARD MACHINES

ANON. Continuous production of resin-bonded woodboard. Brit. Plastics 26, no. 291: 290-4, 308 (August, 1953); *cf.* B.I.P.C. 24: 27.

The first commercial installation of the Bartrev press at Marks Tey, England by Vere Engineering Co., Ltd. is described. The properties of the resulting boards and possible applications, particularly in the building, furniture, and shipbuilding industries, are discussed. 1 table and 13 illustrations. E.S.

SHOUDY, C. A., and HOOVER, J. A. High speed Fourdrinier board. Southern Pulp Paper Mfr. 16, no. 9: 26, 28, 30, 32-4 (September, 1953).

The author discusses some of the unsolved problems involved in high-speed Fourdrinier operation, including the lack of control in stock preparation, difficulties of blending in the machine chest, the correct method of adding rosin size, the need for a really satisfactory headbox, decreased wire life at high speeds, air in stock, and couch-pit, press- and drier-sections, rewinder, and drive problems. Although great strides have been made in recent years and Fourdrinier linerboard is being produced today in better quality at higher tonnages than ever before, it is essential that the unsolved problems are recognized by the industry so that the necessary efforts for solving them will be made. 2 tables and 4 figures. E.S.

MACHINERY—CHIPPERS

GERACE, TOM. First operating report on the Norman chipper. Paper Trade J. 137, no. 8: 32, 34 (Aug. 21, 1953).

One of the first installations of the 84-inch, 10-knife chipper invented by Sigurd Norman of Portland, Ore. was at the Deferiet, N.Y. mill of the St. Regis Paper Co.; it has been operating primarily on hemlock, spruce, balsam, and poplar pulpwood with exceptional efficiency and a reduction in sawdust from 2.5 to 1% since it started 10 months ago. The special features of the Norman design involve helicoidally ground knife bevels and face plates which provide continuous and straight-line cutting action. Cleaner-cut and thinner chips, no bruising, hardly any wear on face plates, and longer knife life are claimed for the new chipper. 2 illustrations. E.S.

MACHINERY—CONVERTING MACHINERY

FINCKE, KURT. Photoelectric scanner for the automatic regulation of paper-converting machinery. Das Papier 7, no. 17/18: 359-60 (September, 1953). [In German]

A new photoelectric scanner (manufactured by DURAG-Apparatebau GmbH, Hamburg-Lockstedt) is described which is particularly suitable for paper cross cutters, multicolor printing machines, packaging machinery, etc. It permits variations of maximum 1 cm. in the distance between the instrument and the paper to be scanned without loss in accuracy of the measurements. 2 figures. E.S.

PARIS, PAUL. Modern converting machinery for boxmaking. Neue Verpackung 6, no. 4: 153-60 (April, 1953). [In German; English and French summaries]

Typical examples of recent German converting-machinery constructions, including printing machines, are given. 12 illustrations. E.S.

MACHINERY—DANDY ROLLS

SINCLAIR, PETER S. Driven dandy rolls. Pulp Paper Mag. Can. 54, no. 9: 112-13 (August, 1953); Paper-Maker (London) 126, no. 4: 260-2 (October, 1953).

Electrical dandy-roll drives synchronized to the speed of the wire and the advantages to be gained from the installation are described, including better sheet formation, less wear of the equipment, and higher machine speeds. E.S.

MACHINERY—DRIVE, ELECTRIC

ANON. Advances in the regulation of electric drives. Das Papier 7, no. 17/18: 357-9 (September, 1953). [In German]

Recent developments in the regulation of the Leonard drive in the United States are reviewed. 7 figures. E.S.

MACHINERY—FELTS

PETERS, IRVING H., and GILL, GEORGE H., III. How to prevent raveling of felts after trimming. Paper Mill News 76, no. 38: 42, 139 (Sept. 19, 1953).

The authors describe a process for preventing the raveling of papermaking felts which have had the original selvedge or overcast edge trimmed off. Collodion, a solution of cellulose nitrate in ether and ethyl alcohol with

castor oil and camphor as plasticizer, is applied to the felt edge by means of a separatory funnel or similar device in a very fine stream and glues several outside warps to the filling. 1 table and 6 figures. R.A.S.

RACE, E. The manufacture, structural design and testing of felts for the paper-making and allied industries. J. Textile Inst. 44, no. 8: P406-29; discussion: P429-32 + 3 folded charts (August, 1953).

A brief description of modern paper- and boardmaking machinery introduces a discussion of the properties required of the fibers used and the cloth constructions necessary in paper-makers felts (wool, wool-cotton, wool-cotton-nylon, cotton, and asbestos-cotton felts). The tests applied are described. The differences between the cloth constructions needed for satisfactory functioning when making coarse, medium, and fine papers as well as multilayer boards are discussed. 1 table, 29 figures, and 6 references. E.S.

MACHINERY—FILTERS

KANE, EDWARD. Replaceable micronic filters; a new tool for the chemical engineer. Chem. Eng. Progr. 49, no. 9: 487-90; discussion: 490 (September, 1953).

The author discusses a relatively new type of filter element, the cartridge type of disposable filter for clarifying fluids or protecting equipment through which fluids must pass. These filters operate well into the micronic range of particle size; they are available in a variety of sizes and types and are composed of fibers, fabrics, paper, porous ceramics or plastics, powdered metals, and electroformed screens. All types operate under three general mechanisms, i.e., separation in depth, surface impingement, and chemical adsorption; their mode of operation is outlined, with particular reference to the Cuno Micro-Klean filter element, a resin-impregnated woolen fibrous mass, belonging to the class of oriented or graded-density, depth-type filters. These filters are generally inexpensive to operate when total costs, both fixed and operating, per gallon are considered. The units have the additional advantage of being installed in the piping system. The engineering data available regarding the performance of these cartridges in terms of degree of filtration are growing as new techniques are devised. The data for determining the necessary size of a filter unit have lagged, and manufacturers are necessarily operating empirically at present; however, improvements are being made in this direction. 3 figures and 11 references. E.S.

MACHINERY—PACKAGING MACHINERY

FUCHS, LOUIS. Development of the modern packaging machine. Verpackungs Rundschau no. 4: 140, 142-5 (April, 1953). [In German]

In an issue commemorating the 100th anniversary of the Schweizerische Industrie-Gesellschaft Neuhausen am Reinfall, Swiss constructors of railway cars and arms, a chapter is devoted to the development of wrapping and packaging machinery for small articles (bouillon cubes, chocolate bars, cacao, starch, detergents, etc.), a new branch added in 1906. Examples of the firm's constructions are given. 9 figures. E.S.

MACHINERY—PAPER MACHINE—YANKEE TYPE

SUNDSTRÖM, LARS. Operating experiences with the Yankee machines at the Kuusankoski paper mill after the installation of suc-

tion couches and presses. Paper and Timber (Finland) 35, no. 8: 314-19 (August, 1953). [In Swedish; English summary]

Two Yankee machines delivered by Voith in 1935 and 1936—the one for the manufacture of heavy bleached and unbleached papers (I) and the other for thin bleached and unbleached papers (II)—were recently equipped with Beloit suction-couch rolls and suction presses. As a result of these installations, strength properties of the papers decreased slightly, whereas uniformity of basis weight and gloss improved considerably. The net production of (I) rose 15% and that of (II) 20% through possible higher machine speeds, better machine efficiencies, and a reduction in the percentage of broke. 13 figures. E.S.

MACHINERY—PRINTING MACHINE

ROBERTSON PAPER BOX COMPANY, *Montville, Conn.* "Windbox" traps spray, prevents offset. Boxboard Containers 71, no. 729: 38 (September, 1953).

A "windbox," which can be constructed of fiberboard, masonite, wood, etc., consists of front, back, and two side sections, which actually boxes the delivery end of a printing press. The box functions as a trap, confining offset spray between sheets. The encaged air momentarily slows down the movement of a printed sheet and keeps it from dropping immediately onto the previously printed sheet, thus providing extra drying and airing time. 3 figures. R.A.S.

MACHINERY—PUMPS

WACHTER, GEORGE. [Moderator] Maintenance of pumps and piping. Paper Mill News 76, no. 34: 54, 56, 60, 62, 86 (Aug. 22, 1953).

The text of a round-table discussion on maintenance problems of pumps and pipings is presented. E.S.

MACHINERY—SAWS

HILDEBRAND, W. H. [Moderator] How can power saw service, maintenance and performance be improved? Pulpwood Annual: 10-12, 14 (1953).

A panel discussion is presented, in which W. H. Lynn, D. A. Swan, Eugene Carey, and J. H. Brady participated. 1 table (analysis of hourly earnings of cord cutters). E.S.

MACHINERY—SCREENS

RANHAGEN, GUSTAF. The screening of unbleached sulfite pulp. Svensk Papperstidn. 56, no. 15: 565-76 (Aug. 15, 1953). [In Swedish]

The author discusses first the different screen constructions (flat, revolving, centrifugal, and vortex-type screens, and fractionating machinery), and their characteristics and functions, followed by a description of the impurities present in unbleached sulfite pulp and their ease of separation in the different screen types. Examples of various screen combinations are given, with particular emphasis on screening in two stages. For highest screening efficiency (i.e., lowest fiber losses and highest possible cleanliness of the pulp), the coarse, easily broken-apart impurities (tailings or screenings) should be

removed at an early stage. The screening process should be carried out in stages with different complementary types of screens; each unit should operate under optimum conditions. Particular attention should be paid to the final fraction of the pulp. 28 figures and 11 references. E.S.

MACHINERY—VALVES

HOOKWAY, WILLIAM C. Getting the most out of your valves. Paper Mill News 76, no. 34: 110-12, 114 (Aug. 22, 1953).

The author shows that through proper education of personnel responsible for the selection, installation, operation, inspection, and maintenance of valves, much longer life and better operating results can be expected than is presently being experienced. 10 diagrams. E.S.

MANILA HEMP

SPENCER, J. E. The abacá plant and its fiber, Manila hemp. Econ. Botany 7, no. 3: 195-213 (July-September, 1953).

The abacá plant (*Musa textilis*) and its habitat, propagation, plantation, diseases and pests, nomenclature and characteristics, harvesting and preparation, utilization, and production and trade are discussed. Manila hemp is the world's foremost cordage fiber; in addition it has been used in Japan in the production of heavy papers for the construction of movable walls and in the United States for conversion into strong brown papers; it is now being used in the form of waste rope for making a variety of grades of paper ranging from strong white tissues to strong and heavy sacking for flour, lime, cement, and similar commodities. 10 illustrations and 22 references. R.A.S.

MATERIALS HANDLING

ADAMS, D. S. Limestone handling at Oxford Paper Company. Pulp Paper Mag. Can. 54, no. 9: 127-8 (August, 1953).

A mechanized method for unloading limestone from open-top rock cars with one sliding door on each side, trucking the limestone to the Jenssen-tower elevator (about 90% of the load) or storage (about 10%), and dumping the load from the elevator at the top of the tower, and the resulting savings in manhours are discussed. 1 diagram. E.S.

BATTEY, PAUL L. Today's ground floor manufacturing plant. Paper, Film and Foil Converter [previously Am. Paper Converter] 27, no. 9: 17-19 (September, 1953).

The author outlines the advantages of a ground floor plant, including flexibility of product routing with a minimum of aisle space, elimination of waste time at elevators, and simplicity of interdepartmental transport. He discusses comparative costs for construction, floor requirements, and electrical distribution, with emphasis on employee comfort. The trend toward a "push-button" factory is recognized. 3 illustrations. R.A.S.

METERS AND RECORDERS

ROTAMETER MANUFACTURING COMPANY, LTD., *Croydon, England.* Rotameter control equipment. World's Paper Trade Rev. 140, no. 4: 293 (July 23, 1953).

Reference is made to electrical and air-operated types of Rotameter flowmeters, including the new "Flow ratio" control. 1 illustration. E.S.

MILL MANAGEMENT

BLACK, H. A. The human being—the most difficult measurement and control problem of all. Tappi 36, no. 9: 154-6A (September, 1953).

The author indicates briefly some of the measurement and control devices available to the management of men (psychological testing, aptitude and skill measurements, improved personal interviews, job evaluation, attitude measurement, industrial training programs, etc.) and mentions some of the areas of human activity in which good measurement is lacking and very little control available (an effective method of communication for passing information up and down through an organization, labor relations or union management relations). He suggests that some consideration be given to adjusting the industrial environment to fit the needs and personalities of men in preference to elimination or minimization of the human factor in production. Rather than creating an environment in which the individual, the human being, will be more standardized, one may be needed in which he can be decontrolled, i.e., one in which there is opportunity for his growth and the use of his creative abilities. E.S.

ELLIOTT, NORMAN J. Is your management functioning? Boxboard Containers 71, no. 729: 32, 34 (September, 1953).

In examining the problems of management common to a business in the paperbox field, the work of readjusting the organization for most efficient functioning is divided into four phases. The first phase is the gathering of information relating to functions, responsibilities, and duties for all administrative and supervisory jobs and a review of all operating records and procedures. Company forms, reports, procedural outlines, and listings of records and uses to which all of these were put by management make up the second phase. The phase of making observations and determinations of job content, job requirements, and working time requirements by the author comes third, and finally, a blueprint is made for reorganizing job assignments and duties on the basis of the acquired data, giving specific recommendations in a sample case. 1 table. R.A.S.

ELLIS, GEORGE E., JR. [Moderator] Planned preventive maintenance. Paper Mill News 76, no. 34: 52, 126 (Aug. 22, 1953).

The maintenance operation of the plant of the Scott Paper Co. at Chester, Pa. is described, followed by a question-and-answer period on maintenance schedules. E.S.

MARTIN, GEORGE J. Preventive maintenance. Paper Mill News 76, no. 34: 88, 90-2, 95, 97, 114 (Aug. 22, 1953).

The author describes the steps in planning and installing a sound preventive-maintenance program, including a complete equipment record, preventive-maintenance inspection records, work orders, maintenance time cards, storeroom-withdrawal orders, monthly reports of preventive-maintenance inspections, and mechanical downtime reports. He also discusses the type of personnel required, the provision of a manual of instructions, responsibility for maintenance, weekly maintenance conferences, and the evaluation of the entire program (savings and benefits). E.S.

PERRY, WILLIAM A. Records and reports essential to good maintenance. Pulp and Paper Manual of Canada 21: 25, 27, 29, 31 (1953).

Preventive maintenance was achieved at the Inland Steel Co. by an organized program of records and reports. Data were included on all information pertaining to equipment received, established records for inventory control, specifications and data sheets, and recurring records and reports. R.A.S.

ROBERTS, FRED. Building a management team. Paper Mill News 76, no. 33: 12-14 (Aug. 15, 1953).

The author points out examples of nonco-operation in mill organization in the pulp and paper industry which have resulted in loss in production. The most important ingredient in an effective, smooth-running organization is teamwork. This teamwork can be brought about by common goals, sharing of knowledge, and recognition of individuals. The men themselves will be trained toward this end by leadership through direction, in which individuals are developed by participation, acceptance of responsibility, and knowledge through their own mistakes. R.A.S.

SHOCKLEY, HENRY W. Maintenance engineering organization. Paper Mill News 76, no. 34: 105-6, 108 (Aug. 22, 1953).

The duties and responsibilities of the maintenance-engineering organization in a small plant are presented in a chart; the functions of the individual members of the maintenance staff are outlined. 1 chart. E.S.

MOLDED PULP ARTICLES

ANON. Pulp-resin preforms; impregnated paper products based on Bakelite resins. Paper Making and Paper Selling 72, no. 2: 30-1 (Summer, 1953).

The process of producing a preform, a slurry of pulp and resin ready for molding, is described. The process has been used in manufacturing large deeply drawn articles, such as loudspeaker diaphragms, chassis and valve-cover tops, and protector domes. The possibility of using the process to make radio cabinets, furniture accessories, and curved panels of all kinds is suggested. 4 illustrations. R.A.S.

NEWSPRINT—STATISTICS

PULP & PAPER. Newsprint review; the world shortage is over—now what of the future? Pulp & Paper 27, no. 8: 164-6 (Aug. 1, 1953); *cf.* B.I.P.C. 22: 837.

An all-time high in the world production of newsprint, 10,600,000 tons, ended the shortage the industry has been experiencing in the past seven years. Data on the production of newsprint in 1952 show that 64% of this production has been in North America. Most of the information is taken from data supplied by official Canadian and United States industry sources. 1 table and 1 graph. R.A.S.

PACKAGING

ANON. Pinching bag. Modern Packaging 27, no. 1: 96-8 (September, 1953).

By arranging two opposing spot heat seals on lengths of extruded polyethylene film in tube form (used to package paper cups), the film is constricted just sufficiently to permit one cup to be pulled out at a time while the others remain in place, thereby forming a convenient economical disposable dispenser package for paper cups. 6 illustrations. R.A.S.

ANON. Switch from paper package to metal lithographed can pays Coast packer. Modern Lithography 21, no. 9: 52 (September, 1953).

Savings in labor and production time and greater sales appeal are claimed by Andersen's Foods, Inc. of Santa Barbara, Calif. after changing from cellophane-enclosed waxed cartons to metal cans for packaging frozen soups. 2 illustrations. E.S.

ANON. Upswing in unit packaging. Modern Packaging 27, no. 1: 89-94, 206, 208-10 (September, 1953).

The unit-of-use package, small packets or envelopes of heat-sealing papers, foils, films, or laminations which are formed, filled, and sealed by automatic machines and turned out at high speed in continuous strips, is discussed. The advances in the use of this package have been aided by a number of new materials with the necessary thermoplastic characteristic, especially laminations of cellophane and polyethylene, which are responsible for the liquid-content packages; improvements in machinery, higher speeds, lower cost and upkeep; and new convenience features, including pull-tab opening devices and perforated tear lines and notches. 18 illustrations. R.A.S.

CENTRAL ICE CREAM COMPANY, *Chicago.* Foil-wrapped ice cream. Modern Packaging 27, no. 1: 138 (September, 1953).

The company has introduced an aluminum-foil wrapped package, made with a heat-sealing type of waxed-paper backing, for ice cream. The package is claimed to have the advantages of reflective insulating properties which reduce melting of the ice cream when it is carried home from retail outlets and dead-folding characteristics of the foil which allow a portion of the ice cream to be removed and the remainder to be rewrapped tightly. 1 illustration. R.A.S.

GOLD SEAL COMPANY, *Bismarck, N.D.* Packaged shoe shine. Modern Packaging 27, no. 1: 100-1 (September, 1953).

The company has developed a one-minute shoe shine pack which is made up of nonwoven, heat-sealable cellulose fabric, lined with polyethylene. A gelatin capsule of polish under the surface side is crushed and wiped on the shoe, the reverse, cellulose-fabric side, is for buffing; the plastic film separates the user's hand and the polish. 3 illustrations. R.A.S.

H. ST. Sigelit beakers; impregnated board containers with transport-safe hermetic closure. Neue Verpackung 6, no. 8: 392 (August, 1953). [In German]

A brief description is given of grease- and moistureproof containers in cup or beaker form for packaging pasty foods (jams, mustard, fats, etc.) and oils. The impregnation varies according to the requirements of the contents; a patented safe closure which will not become detached during handling and an electrical device for applying it are also provided. E.S.

KRAMMING, ERIK. Sales problems of the Swedish boxmaking industry. Verpackungs Rundschau no. 6: 235-8 (June, 1953). [In German. Abridgment] *cf.* B.I.P.C. 21: 476.

The activities of Åkerlund & Rausing, Lund, the foremost packaging enterprise in Sweden, are outlined, with particular reference to the organization of the sales and sales-promotion departments. E.S.

KRUSE, KURT. The packaging of men's shirts. Neue Verpackung 6, no. 5: 232-3 (May, 1953). [In German]

German postwar practices in packaging men's shirts in cardboard boxes are outlined; cellophane wrapping has so far only been introduced for dress shirts. 1 illustration. E.S.

LATIMER, ROBERT. Special box designed by paper firm protects heirlooms in storage. Am. Paper Merchant 50, no. 9: 24, 74 (September, 1953).

Olmsted-Kirk Co., Dallas has devised a box for packaging wedding gowns and other heirloom garments designed to provide maximum protection against insects, humidity, dust, and the ravages of time. The box consists of a window box of ⅛-inch corderage with a waterproof aluminum finish; a heavy flexible acetate envelope with a snap-button top for lining the window box; a sheet of heavy laminated aluminum foil for wrapping the window box; heavy clay-finish, aluminum-treated "boots" fitting tightly over either end of the foil; and a ⅜-inch corderage exterior box waterproofed by several layers of sprayed aluminum finish. The box is not sealed at any place, permitting inspection of the contents at intervals. 1 illustration. R.A.S.

NATIONAL TEA COMPANY, *Chicago*. Salad by machine. Modern Packaging 27, no. 1: 108-9, 218 (September, 1953).

The packaging of ready-to-serve salads and desserts in paraffined paper containers with snap-in lids on a large-scale necessitated the exploration of mechanization. The resulting automatic filling machine eliminated problems of accurate weight control, neat appearance, and production time. One dozen filled containers are packed in a corrugated shipping container in two layers separated by a sheet of corrugated board. The shipping containers are sealed with gummed tape and provided with two die-cut slots in the side walls which expediate refrigeration. 2 illustrations. R.A.S.

OHL, FRITZ. Oil- and greaseproof papers for packaging. Verpackungs Rundschau no. 8: 340-2 (August, 1953). [In German]

The author discusses the packaging of oils in paperboard containers and the available means (coating or impregnation with paraffin and microcrystalline waxes and different plastics or use of suitable laminations) for obtaining the required greaseproofness. A differentiation must be made between edible and mineral oils; the former require additional protection against turning rancid. Low water-vapor permeability of the packaging materials used and the incorporation of antioxidants will assist in inhibiting rancidity. E.S.

STORCK, WENNEMAR. The Perga package; its manufacture and applicability in the dairy industry. Verpackungs Rundschau no. 4: 169-71; no. 5: 206-9 (April, May, 1953). [In German]

The manufacture and properties of the German Perga containers (paraffined cartons developed by Jagenberg-Werke, Düsseldorf) suitable for all products of the dairy industry (milk, cream, creamed cheese, yogurt, etc.) are outlined; machinery for filling and closing the containers is described. 13 illustrations. E.S.

WHITAKER, THOMAS W., and BOHN, G. W. Contributions of applied science to the lettuce industry of the Southwest. Econ. Botany 7, no. 3: 243-56 (July-September, 1953).

The main part of the article deals with the contributions of plant breeders, soil scientists, and irrigation and agricultural engineers to the development and growth of the lettuce industry in the United States. The final section covers packaging with particular reference to vacuum cooling (*cf.* B.I.P.C. 23: 31). 2 tables, 9 illustrations, and 11 references. E.S.

PAPER—ABSORBENCY

TOLLENAAR, D. Exchange of liquid between paper pores. Appl. Sci. Research A 3, no. 6: 451-61 (1953).

The capillary rise of liquid in paper cannot be explained quantitatively by assuming uniform capillaries. A distribution function for the capillary radii of a polydisperse fictitious system is approximated and introduced; relationships are derived which take into consideration pore density, exchange of liquid between capillaries, and capillary pressure. A formula offers the possibility of calculating a correction term for the capillary pressure and the volume of liquid at any level. 8 figures and 3 references. R.A.S.

PAPER—DEFECTS

DAY, FREDERICK T. Paper fluffing, glare & picking; the cause and remedy. Paper & Print 26, no. 2: 194 (Summer, 1953); *cf.* B.I.P.C. 23: 736.

Causes and remedies for paper fluffing, glare, and picking are given. R.A.S.

PAPER—MERCHANDISING

DEWEIR, RAYMOND A. The Stanford building. Paper Sales 13, no. 8: 12-15 (August, 1953).

A description of the modern three-story building of the Stanford Paper Co. in Washington, D.C. and its streamlined handling operations is given. 9 illustrations. R.A.S.

FRANKLIN, S. W. Cooperation is a two-way street; much thought, planning and follow-through needed between mills and merchants. Paper & Twine J. 27, no. 7: 12, 25-7 (September, 1953).

The author believes that merchandising and sales promotion can be greatly improved by the preparation of effective material by the mills (advertising should be prepared by someone within the mill with a knowledge of both the product and advertising) and the assurance of the use of this material (in a convenient size and shape and presenting a sales story) by the merchants and salesmen. 2 illustrations. R.A.S.

KATZ, EMANUEL. Retail revolution challenge to merchant. Paper & Paper Products 95, no. 1: 4-7; no. 2: 18-21; no. 4: 10-11 (July 5, 20, Aug. 20, 1953).

The full text of a speech given at a meeting of the Metropolitan Bag and Paper Distributors Association in New York is reprinted. The author analyzes the situation in the field of retail buying as a revolution of the shopper toward self-service impulse buying in the evening at large retail stores. The customer is buying strongly advertised presold brands. Paper manufacturers are advised to recognize this situation and meet it by competing for the brands

which are insured sales risks, discouraging sales to makers of exclusive and slow-moving brands, and training salesmen to recognize the apparent sales risks of the brands. R.A.S.

MARKS, FRED. High cost of doing business. Am. Paper Merchant 50, no. 8: 15, 52 (August, 1953).

The paper is an analysis of the various costs of doing business in the paper trade; a few statistics are included comparing present high costs with previous years. R.A.S.

THE NATIONAL PAPER TRADE ASSOCIATION. More data on paper handling costs. Paper & Twine J. 27, no. 7: 13, 30 (September, 1953); *cf.* B.I.P.C. 24: 34-5.

Two case histories of wrapping paper house operations as recorded in the association's booklet described in the previous reference are given. 1 illustration. R.A.S.

OSTROW, MARVIN. Claims in the paper industry. Am. Paper Merchant 50, no. 8: 14, 52 (August, 1953).

The author discusses the relationship between the printer and the wholesaler, problems most frequently encountered, and means for improving relations. R.A.S.

PAPER—OPTICAL PROPERTIES

STENIUS, ÅKE S:SON. The application of the Kubelka-Munk theory to the diffuse reflection of light from paper. Part III. Surface reflection and light scattering coefficient of paper. Svensk Papperstidn. 56, no. 16: 607-14 (Aug. 31, 1953). [In English; German summary] *cf.* B.I.P.C. 22: 262.

The influence of the surface reflection factors (I) on the reflectance values required for the calculation of the scattering coefficient of handmade sheets has been analyzed. A method for the determination of (I) is described. It is shown that—if the magnitudes of (I) are known—the correct value of the scattering coefficient of the pulp may be calculated without requiring additional measurements. The influence of (I) on the calculation of the scattering coefficient is shown graphically. By measurements of (I) of different types of handmade sheets it is shown that (I) are negligible if the papers are dried between blotting papers. However, if polished sheet-metal plates are used in place of the blotting paper, the (I) must be considered, if results comparable with those obtained with the dull handmade sheets are required. 2 tables, 6 diagrams, and 19 references. E.S.

PAPER—VISCO-ELASTICITY

ANDERSSON, OLLE. Paper as a visco-elastic body. VII. A note on the application of mechanical models to studies of the tensile properties of paper. Svensk Papperstidn. 56, no. 15: 587-9 (Aug. 15, 1953); [In English] *cf.* B.I.P.C. 23: 898-9.

The author reviews the three-element model proposed by Steenberg (*cf.* B.I.P.C. 17: 638; 18: 103) for the purpose of calculating elastic and viscous characteristics of paper from the load-elongation curve. It is pointed out that the viscosity curve obtained by graphical analysis is sensitive to the graphical method employed. To overcome this difficulty an alternative three-element

model is used, in which a parallel combination of dashpot and spring is in series with a spring. In all cases investigated (about a dozen papers of various grades and origin) the plot of the force on the dashpot *vs.* rate of movement of the latter is linear, indicating a liquid of the Bingham type (yield value and Newtonian viscosity). Relationships are given for (*a*) a quantity that is proportional to viscosity and (*b*) a coefficient of viscous traction (the latter takes into account the rate of elongation and the dimensions of the paper specimen). 5 diagrams and 6 references. J.A.V.

ANDERSSON, OLLE, and SJÖBERG, LARS. Paper as a visco-elastic body. VIII. Tensile studies of paper at different rates of elongation. Svensk Papperstidn. 56, no. 16: 615-24 (Aug. 31, 1953). [In English; Swedish and German summaries]

Stress-strain experiments with various paper samples (MG kraft, bag paper, sulfite handsheets, and cellophane) were carried out at different rates of elongation from 250Å/second up to 100 mm./second (which was considered the upper limit of the static range). For the range 0.01-100 mm./second, a special instrument was constructed which consists of a cam-wheel device for the elongation of the paper strips and a stress-measuring device involving a high-frequency bridge on which the paper stress produces an unbalance. Depending on the time scales used, the stress-strain curves are recorded on a cathode-ray oscillograph, a magnetic oscillograph, or a potentiometer recorder. For extension to lower speeds, a modification of the instrument used by Ivarsson and Steenberg (*cf.* B.I.P.C. 18: 542-3) was employed. The present study deals with: (1) the influence of the rate of elongation on the stress-strain curve in general at constant rate of elongation; (2) relaxation curves following stress-strain curves at different rates of elongation; and (3) the influence of sample dimensions upon tensile properties. (1) A difference in the rupture stretch at different rates of elongation could not be determined, whereas the rupture stress increases slightly at increased rates; this relationship can be considered on a logarithmic basis. The initial slope of the curve is independent of the rates of deformation, and the differences in rupture stress which can be determined must be ascribed to the plastic properties of the samples. A coefficient of viscous traction could be derived and seems to be approximately inversely proportional to the rate of elongation. (2) Experiments were also carried out on paper strips which were allowed to relax after stretching to a predetermined strain. The relaxation curves thus obtained show the influence of the rate of stretching during deformation. A coefficient of viscous friction was calculated from these curves, which is approximately of the same order as that calculated from the stress-strain curves. (3) The influence of sample dimensions on the tensile properties at constant rate of deformation was also studied. The results indicate that the length of the strip has a much greater influence upon tensile strength than the rate of deformation. 4 tables, 14 figures, and 16 references. E.S.

PAPER AND PULP INDUSTRY

ANON. The forest industry in France. Norsk Skogind. 7, no. 8: 244-50 (August, 1953). [In Norwegian]

A review of the conditions in the French forest industry is given, including statistical data on the pulp and paper industry, exports, and imports, principally for the period from 1949-52. 14 tables. E.S.

LARSON, L. K., and FIBRE CONTAINERS. Wood pulp and pulpwood statistics. Fibre Containers 38, no. 8: 109-12, 114, 118, 120, 122-6 (August, 1953); *cf.* B.I.P.C. 23: 112.

Changes in the status of the North American pulp and paper industry and its relative position in the world's pulp and paper economy in the past 15 years are reviewed. These changes are studied by an examination of the economic background, changes in the pattern of world supply (North America supplied 43% in 1937 and 251% of 1937 in 1951), changes in total wood-pulp demand in the U. S. market (50% and 214%) and "old world" markets, changes in world market supply (26.6% and 170.6%) and demand, and changes in international trade in pulp. Statistics given in tabular form show a slight decrease in the pulpwood consumption as compared with 1951, but this decrease was absorbed by a larger decrease in imports, and pulpwood production in this country increased slightly. North America has become more self-sufficient by increasing its production to a greater extent than its consumption. 19 tables and 4 graphs. R.A.S.

PAPER, FILM AND FOIL CONVERTER. Converters and their suppliers reveal prosperity. Paper, Film and Foil Converter [previously Am. Paper Converter] 27, no. 9: 20-2, 24, 26, 30, 32, 34, 36, 38, 40-5, 47-8, 50, 54, 56, 60-4, 66, 68, 70 (September, 1953).

Progress and modernization in the converting industry since Jan. 1, 1950 are outlined in this survey of converters and mill-converters and their products, ranging from napkins and tissues to novelties, decorations, plastic-bag fabricators, foil laminators, etc. Consolidations and expansion in the industry are given in tabular form; the numerous companies are listed individually with progress made by each. 3 tables, 1 map, and 28 illustrations. R.A.S.

PULP & PAPER. [1953 world review] Pulp & Paper 27, no. 8: almost the entire issue (Aug. 1, 1953); *cf.* B.I.P.C. 22: 840-1.

A summary and statistics of the pulp and paper situation throughout the world are presented. The following sections are included: North America (United States, p. 59-60, 62-4; Canada, p. 67-8, 178); Europe (Sweden, Finland, Norway, Great Britain, Russia and its satellites, France, Yugoslavia, Belgium, Netherlands, Switzerland, Eire, Spain, Portugal, West Germany, Austria, Italy, Greece, and Denmark), p. 75-6, 78, 80, 82, 84, 86, 88, 91-4, 96, 98, 100, 102-3, 106-8, 110; Asia (Japan, Red China, Taiwan, India, Pakistan, Turkey, Israel, The Philippines, and the rest of Asia), p. 120, 124, 127-8, 130-2; Africa (South Africa, Middle Africa, North Africa, and Egypt) p. 134, 136, 138; Oceania (Australia, New Zealand, and Hawaii) p. 140, 142, 144; and Latin America (Brazil, Argentina, Mexico, Chile, Peru, Ecuador, Colombia, Uruguay, Guatemala, and rest of America), p. 146, 149-50, 152-4, 156, 158. Detailed statistical tables for the United States pulp and paper industry are given on pages 185-6, 188, 190, 192, 194, 196, 198, 200; the corresponding information for Canada is listed on pages 201-2. Numerous tables and illustrations are included throughout the issue. R.A.S.

PULP & PAPER. World pulp trends; what's ahead for basic commodity? Pulp & Paper 27, no. 8: 25-30, 33 (Aug. 1, 1953).

World pulp statistics for 1952 show an upward trend in production, the achievement of self-sufficiency in North American production, and a prospect of enough forest products for all forseeable needs. A large map showing directions of wood-pulp flow points out the great amount of exports being sent to the South American market from the three pulp-producing areas (Canada, Scandinavia, and the United States) and an increasing amount directed toward the potential markets of the Pacific Area and the Far East. Requirements for 1960 are anticipated, and forest policies to ensure meeting these needs are outlined. 7 tables, 3 figures, and 1 map. R.A.S.

Stephenson, J. Newell, and Turner, John S. Milestones 1923-1932. Pulp Paper Mag. Can. 54, no. 9: 93-108 (August, 1953); *cf.* B.I.P.C. 24: 38.

This is the third installment in a series of articles covering the history of the growth and development of the pulp and paper industry in Canada. The outstanding events in this 10-year period were the inauguration of the Pulp and Paper Research Institute of Canada at Montreal and the depression and its effects on the industry. 17 illustrations. R.A.S.

Vincent, Rex. Non-paper cellulose; rayon, acetate, cellophane, plastics, etc. Pulp & Paper 27, no. 8: 171-2, 174, 176, 178 (Aug. 1, 1953); *cf.* B.I.P.C. 22: 841.

The author reviews the production and consumption of dissolving pulp in the United States and Canada during 1952, stresses the plentiful world supply, and estimates production for the next few years. 9 tables and 1 graph. R.A.S.

PAPER AND PULP INDUSTRY—DIRECTORIES

Pulp & Paper. World market woodpulp; directory of producers, importers and agents. Pulp & Paper 27, no. 8: 34, 36, 38, 40, 42, 46, 48, 50 (Aug. 1, 1953); Paper Mill News 76, no. 41: 19-20, 22, 24, 26, 28, 30, 32-4, 36-8 (Oct. 10, 1953).

A list of the names, addresses, and products of world producers of market wood pulp (by countries) and importers and agents offering market wood pulp in the United States and Canada is presented; brand names are included in many cases. R.A.S.

PAPER AND PULP INDUSTRY—PUBLIC RELATIONS

Paper Trade Journal. How Gardner Board & Carton treats its visitors to "tailor-made" plant tours. Paper Trade J. 137, no. 11: 21 (Sept. 11, 1953).

As a part of its public relations program, the company plans tours for its visitors based on the meeting of individuals responsible for the plant's production, rather than machinery and statistics. 2 illustrations. R.A.S.

Wright, C. E. How one company publicized its employee relations program. Paper Trade J. 137, no. 7: 29-30, 34 (Aug. 14, 1953).

Highlights of the employee-relations program at National Container Corporation's Jacksonville plant, which were publicized by means of a community presentation and a local radio broadcast, are outlined. The program includes insurance benefits, service clubs, benefits to salaried workers, a safety and health department, a suggestion system, and pension plans. R.A.S.

PAPER AND PULP MILLS

Anon. Number three machine at Westminster Paper. Can. Pulp Paper Ind. 6, no. 9: 14-18 (September, 1953); *cf.* B.I.P.C. 23: 812-13.

Recent installations at the Westminster Paper Co. Ltd. are described, including four three-pocket Waterous grinders, a Beloit Iron Works 135-inch straight Yankee machine, a Worthington turbine, and various accessory motors and rolls. 13 illustrations. R.A.S.

ANON. Paper mills directory 1866. Paper Making and Paper Selling 72, no. 2: 33-6 (Summer, 1953).

A copy of an English and Scotch paper mill directory dated 1866 is reproduced; the mills are arranged by numbers assigned in Excise taxation. R.A.S.

CANADIAN PULP AND PAPER INDUSTRY. The story of the Westminster Paper Company. Can. Pulp Paper Ind. 6, no. 9: 8-13 (September, 1953).

The history of the company is traced briefly, developments in machinery and equipment are described, and the company's products and brand names are listed. 12 illustrations of the mill and equipment. R.A.S.

JACOBS, PAUL E. The dynamic midget. Paper Trade J. 137, no. 11: 14-18 (Sept. 11, 1953).

The mill and machinery of the Cellulo Company, Sandusky, Ohio, referred to as the smallest mill with the smallest paper machine and the largest manufacturer of heavy filter media in the country, is described. 9 illustrations. R.A.S.

STRACEY, P. D. Papermaking possibilities in India. World's Paper Trade Rev. 139, no. 24: 1840, 1843 (June 11, 1953).

The possibilities for a paper mill in the Assam valley with particular reference to the availability of bamboo, reeds and grasses, and native tree species are pointed out. The site chosen for the first paper mill in Assam is at the confluence of the two rivers Tirap and Burhidihing and on a railway line. To start production as soon as possible, it is proposed to begin with the manufacture of newsprint and low-cost printings from groundwood pulp, adding semichemical pulp and chemical pulp as soon as the necessary installations are completed, so that the final capacity will be around 40-50 tons/day of high-class writing and magazine papers. The layout will provide for future extension. E.S.

PAPER AND PULP MILLS—WATER SUPPLY

BROZ, ANDREW A. Pulp mill process water from a salt contaminated river. Tappi 36, no. 9: 161-2A (September, 1953).

The problems connected with locating a suitable water supply for the new Weyerhaeuser kraft mill under construction at Everett, Wash. on a salt-fresh water river (the Snohomish) are outlined. The techniques employed and the final results are discussed. 3 tables, 1 map of the Snohomish River estuary, 1 diagram, and 2 references. E.S.

PARTIN, JOHN L. Water conservation—a by-product of industrial waste control. Sewage Ind. Wastes 25, no. 9: 1050-9 (September, 1953).

In a general discussion on water conservation in Southern California (Los Angeles County in particular) to obtain a satisfactory balance between water supply and population, agriculture, and industry, a brief reference is made to the problems of paper and board mills in that area. Los Angeles Paper Box and Board Mills operates its own water well. Two other mills have reduced their water usage by clarification and recirculation from 17,500 to 12,500 gal./ton of tissue paper and from 7000 to 3400 gal./ton of paperboard products. The lowest unit demands are possible when the product will

tolerate the greatest range in the color factor, such as paperboard. However, with the installation of equipment to filter the effluent from settling basins presently operated by Potlatch Forests, Inc. in their Pomona tissue mill, the unit demand may be reduced to 5400 gal./ton of paper. 2 tables, 4 figures, and 1 reference. E.S.

PAPER CONDITIONING

POLLNER, LOUIS. How to condition paper. Graphic Arts Monthly 25, no. 9: 66, 68, 70, 72, 74, 78 (September, 1953).

The problem of providing paper with the correct moisture content and its importance to the lithographic industry is discussed. A paper humidity of 5 to 8% above pressroom humidity (about 45%) is recognized as the most effective for ideal printing conditions; processes for bringing the humidity of the paper to this percentage are evaluated, including the conventional conditioner, a moisture injecting device, a compressed air atomizer, and the evaporative and steam humidifiers. R.A.S.

PAPER MANUFACTURE

RANCE, HERBERT F. Pulp and paper. Repts. Progr. Appl. Chem. 37: 703-22 (1952); *cf.* B.I.P.C. 23: 115.

Technical advances in the pulp and paper industry during 1952 are reviewed. 183 references. R.A.S.

PAPER SPECIALTIES

ANON. Ideas on bread wrapping. Verpackungs Rundschau no. 6: 254-7 (June, 1953). [In German]

Statistical data on the decrease in per capita bread consumption in Germany and the United States since the turn of the century are presented. With reference to American practices in bread wrapping, the application of automatic packaging machinery in German bakeries is discussed and considered economically feasible. The principle of a bread-wrapping machine employing waxed paper and the different sealing methods are described. 7 figures. E.S.

ANON. Polyethylene-coated glassine. Paper Sales 13, no. 8: 17 (August, 1953).

The properties and advantages of polyethylene-coated glassine as a packaging material and some of the products for which it is used are listed. 2 illustrations. R.A.S.

ANON. Something new in vegetable protection. Paper Sales 13, no. 8: 19 (August, 1953).

A vegetable crate liner made of aluminum foil laminated with a waterproof adhesive to heavy wet-strength kraft is being used to package lettuce, broccoli, cauliflower, and celery; advantages of the liner are listed. 2 illustrations. R.A.S.

ANON. Velour coverings for boxes and other packaging materials. Verpackungs Rundschau no. 8: 337 (August, 1953). [In German]

Processes for decorating the surfaces of an article with colored flock fibers include the pasting of a flock-coated paper, spraying, or the use of

electrostatic methods (I) developed by Siemens-Schuckert Werke. The required machinery for (I) is described briefly. 1 illustration. E.S.

CRAIG, F. A. Paper and papermaking; treating base papers for the converter. Paper & Print 26, no. 2: 146, 148, 150, 152 (Summer, 1953); *cf.* B.I.P.C. 23: 739-40.

Requirements for various types of treated papers and boards to be used by a converter are discussed. Included are body papers (abrasive, coating, and photographic base papers, and gummings), M.G. papers (M.G. pressings, caps, envelopes, pastings, manila boards, and duplex papers and boards), boards (pulp, index, manila, ivory, triplex, mill, straw, and box), and miscellaneous (ammunition, bowl, cover, crayon, cigarette, cop, check, chart, blueprint, multicolored, and sampling papers, and waxing cartridges). R.A.S.

DAY, FREDERICK T. Design for fancy papers. Paper & Print 26, no. 2: 169-70, 172, 174 (Summer, 1953).

Trends taking place in the realm of fancy-paper design are from the bizarre and brilliant to the dignity and grace of style. Printed design on viscose films, plain coated papers with metallic seals or labels, tartan plaids, wood-grain papers, flock papers, and signature designs on boxboard are gaining wide popularity. 2 illustrations. R.A.S.

DAY, FREDERICK T. Paper conversion and usage. No. 51. Cracker manufacture. World's Paper Trade Rev. 140, no. 5: 334-5 (July 30, 1953); *cf.* B.I.P.C. 24: 91.

The origin, manufacture, and packaging of cracker bonbons are described briefly. Crackers range from miniature to giant size and are produced in many varieties of papers and decorations. 2 illustrations. E.S.

DOWNS, M. L. Water-barrier materials; basic considerations in the choice of waterproof papers for case liners and barriers. Modern Packaging 27, no. 1: 144-6 (September, 1953).

The author discusses the standards of waterproof barriers and water-vaporproof barriers and the TAPPI dry indicator and General Foods cabinet methods of testing, stressing the necessity for water-vaporproof barriers for a truly waterproof pack. Materials used in waterproof papers are described, including properties of the materials and the assets or liabilities in use. Asphalt is the most advantageous material, primarily because of its low cost; polyethylene has almost all of the desirable characteristics mentioned and one main disadvantage, i.e., high cost. The principal uses of waterproof papers are as shrouds; barriers in multiwall bags, fiber drums, and boxes; and as case liners; various combinations and weights for each use are given. 1 table and 3 illustrations. R.A.S.

FOOD ENGINEERING. Pyramid-type paper bottles made, filled link-fashion. Food Eng. 25, no. 9: 48-9 (September, 1953); *cf.* B.I.P.C. 22: 266-7.

A description of the Tetra Pak paper milk bottle similar to that in the previous references is given. 6 illustrations. R.A.S.

MYHRAN, DEAN. It's time to take a new look at dry cleaners. Paper Sales 13, no. 7: 12-13, 49-50 (July, 1953).

Paper salesmen are encouraged to investigate the field of dry cleaning as a

business prospect; paper products of possible interest are listed. 1 table and 2 illustrations. R.A.S.

WHEELWRIGHT, WILLIAM BOND. How marbled papers are made. Paper Maker [U. S.] 22, no. 2: 1-5 + 2 sample sheets (September, 1953).

Marbling, called the earliest method of decorating paper for use as end papers, is described; its history is mentioned briefly. Needed equipment; preparation of suitable colors; quality, color, texture, and finish of paper; and marbling of trimmed edges are discussed. Three samples of English and three of French marbled papers are included. 6 illustrations. R.A.S.

WHEELWRIGHT, WILLIAM BOND. Paper as a medium of printing. Graphic Arts Education 30, no. 2: 10-19 (Spring issue, 1953).

The author points out the highlights in the history of printing paper since its invention in 105 A.D. in China. The effect of paper properties on printing results and problems in the selection of paper are considered briefly. 5 references. E.S.

WILLIAMS, A. E. Impregnated paper as an anti-corrosive. World's Paper Trade Rev. 140, no. 4: 262, 267-8, 270; no. 6: 403 (July 23, Aug. 6, 1953).

The corrosion-inhibiting properties of sodium benzoate (I) and its application to wrapping paper for preventing rust formation are described. Paper to be impregnated with (I) must be free or very low in chlorides and sulfates. Both kraft and sulfite papers can be used; their pH should not be higher than 5.5. The results of practical corrosion tests with treated and plain papers are given in tabular form and indicate the complete protection offered by the former. A reference to the superiority of (I)-treated papers over the common purple needle paper is contradicted by a manufacturer of such paper, who claims that the (I) treatment involves an expensive procedure, the high cost of which the trade (including the export trade) could not stand, particularly in view of the fact that the criticized purple needle paper has been found satisfactory for over 100 years, with complaints regarding rust few and far between and generally resulting from poor warehousing and other storage conditions. 1 table and 1 illustration. E.S.

PATENTS

ANON. Machine coated patent case ends. Paper Mill News 76, no. 33: 5 (Aug. 15, 1953); *cf.* B.I.P.C. 22: 843.

The Circuit Court of Appeals has upheld the previous decision of the U. S. District Court of the Eastern District of Wisconsin in the alleged infringement suit by Massey and the present owners of the patent no. 1,921,368, Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis. The company will not appeal the second decision, so that the patent case has been concluded. E.S.

PHOTOSYNTHESIS

BROWN, A. H., and FRENKEL, A. W. Photosynthesis. Ann. Rev. Biochem. 22: 423-58 (1953).

This review covers (principally) recent references on five topics in the field of photosynthesis: the efficiency of photosynthesis (minimum quantum requirements); the biochemical pathway of carbon during photosynthesis

assimilation; enzymes directly implicated in the photosynthesis process; photosynthesis and phosphorus metabolism; and the source of photosynthetic oxygen. 1 table and 195 references. E.S.

PHYSICAL TESTING—PAPER—BLOOD RESISTANCE

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY. Blood resistance of butchers' wrapping paper. Tappi 36, no. 9: 124A (September, 1953).

The text of TAPPI Suggested Method T 486 sm-53 is presented for measuring the time of transudation, in hours, of blood from fresh hog liver through a sheet of paper to the extent that 25% of the area exposed to the liver has become discolored. E.S.

PHYSICAL TESTING—PAPER—BURSTING STRENGTH

COTTRALL, LESLIE G. Crêped kraft. World's Paper Trade Rev. 139, no. 23: 1724; no. 25: 1860, 1862 (June 4, 18, 1953).

In answer to an inquiry concerning the loss in bursting strength of creped kraft paper, the explanation is given that creping causes a stretch in one direction and, hence, a weakening of the fibers and much less resistance in that direction. Cottrall criticizes this explanation which does not appear to be consistent with the facts. In the ordinary creping process, fibers are not stretched in any direction; all that happens is that they are somewhat bent in the machine direction (I). If a creped paper is restored to its original uncreped condition, it recovers its original bursting strength. Ordinary machine-made paper, although it has only about half the tensile strength in the cross-machine direction (II) as compared with (I), possesses a much higher stretch in (II). Consequently, when subjected to a burst test, the paper is principally stressed in (I) and reaches a breaking point before (II) is stressed to any great extent. When the paper is creped, the stretch of the paper is reversed, i.e., the direction of greatest stretch is now in (I). Consequently, in the bursting test the paper is principally stressed in (II) and reaches the breaking point before (I) is appreciably stressed. The (II) tensile strength being lower than the (I) tensile strength, the bursting strength of the creped paper will be lower than that of the original sheet, where the higher (I) tensile strength is involved. The ratio of the bursting strength of creped paper to that of the uncreped paper is not a definite quantity but depends on the relative tensile strengths in the two directions of the uncreped paper. E.S.

PHYSICAL TESTING—PAPER—HOLES

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY. Pinholes in glassine and greaseproof papers. Tappi 36, no. 9: 124-5A (September, 1953).

The text of TAPPI Tentative Standard T 485 m-53 is presented; the method covers procedures for the numerical estimation of pinholes per unit area in glassine, greaseproof, or other lightweight, grease-resistant papers with either turpentine or a slurry of carbon black and kerosene as penetrants. E.S.

PHYSICAL TESTING—PAPER—MACHINE DIRECTION

BALCOM, J. C. Paper grain. Paper Making and Paper Selling 72, no. 2: 29 (Summer, 1953).

The significance of paper grain, two simple tests for determining the

machine direction of paper, and the effect of the grain in bookbinding are discussed. E.S.

PHYSICAL TESTING—PAPER—STRENGTH

VOLLMER, WILFRIED. The correlation between tensile strength and bursting strength of paper. Das Papier 7, no. 13/14: 251-5 (July, 1953). [In German; English and French summaries].

The author established a relationship between bursting strength, breaking length, and elongation developed from extensive linear breaking tests on isotropic papers; the calculated and measured values for the spherical deformation (bulging) were in good agreement. In addition, a formula was derived for cylindrical deformations; when both stresses are considered it is also possible to calculate the bursting strength of anisotropic papers quantitatively from linear breaking tests taken in the machine and cross-machine directions. 3 tables, 7 figures, and 6 footnotes. E.S.

PHYSICAL TESTING—PAPER—VAPOR TRANSMISSION

CANTELOW, H. P. Arctic to tropics . . . just dial your climate. Paper, Film and Foil Converter [previously Am. Paper Converter] 27, no. 9: 15-16 (September, 1953).

The test rooms for reproducing various climatic conditions at the Western Waxed Paper Division of Crown Zellerbach Corp., San Leandro, Calif. are described. Each of the six rooms (arctic, tropic, desert, prairie, variable, and TAPPI) covers a specific range of temperature and humidity. Various instruments and equipment used for testing waxed paper to determine the most efficient prevention of moisture transmission under each condition are also described. 1 table and 4 figures. R.A.S.

CHANG, S. C., and HUTCHEON, N. B. Performance of desiccants in the dry pan test for water vapor permeance of membranes. Can. J. Technol. 31, no. 9: 175-92 (September, 1953).

Tests were carried out to establish the magnitude of the variations attributable to desiccant condition in the dry-pan test for water vapor permeance of membranes. The change in slope of the curve of weight gain *vs.* time for the dry-pan test was used to predict the apparent relative humidity on the desiccant side of the membrane for various amounts of moisture gain for three different desiccants (silica gel, calicum chloride, and magnesium perchlorate) at three different rates of moisture transmission. The relative humidities found under the dynamic conditions of test were all much higher than the corresponding equilibrium data quoted for desiccants and were shown to be influenced by the type and initial dryness of the desiccant and by the degree of agitation during the test. The test procedure used would appear to have some value also in the assessment of solid sorbents for use in certain practical drying applications. 1 table, 9 figures, and 13 references. E.S.

PHYSICAL TESTING—RUBBER

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY. Hardness of rubber-covered rolls (Plastometer test). Tappi 36, no. 9: 120-1A (September, 1953).

The text of TAPPI Suggested Method T 640 sm-53 is presented; it is intended to provide a reproducible procedure for determining the hardness of roll coverings with the Pusey and Jones Plastometer. 1 table and 2 figures. E.S.

PHYSICAL TESTING—TAPE TESTER

ANON. The tack tester No. 818, system Neubronner. Das Papier 7, no. 13/14: 269-70 (July, 1953). [In German] *cf.* B.I.P.C. 23: 274-5.

The mode of operation of the instrument for measuring bonding strength, bursting strength, and tear, and the required calculations are outlined. 1 illustration. E.S.

PITCH TROUBLES

THOMMEN, ERNST. Studies of pitch in sulphite pulp. Summary of the booklet "Harzschwierigkeiten in der Zellstoff- und Papier-Fabrikation." Wildegg/Schweiz, im Selbstverlag, 1952. Paper Trade J. 136, no. 21: 17-18 (May 22, 1953). [Original in German; article in English]

Unbarked wood which had been stored in water for one to two years had a pitch content of 1.76% as compared with 1.52% for air-seasoned wood. Barked wood showed no difference between water-seasoned and air-dried wood. The pitch from the water-soaked wood was lighter in color, more fluid, less sticky, and more odoriferous than pitch from air-dried wood. However, if water-soaked wood was air dried, the pitch was very much stickier than that taken from nonsoaked air-dried wood. Thus, floated wood should not be dried before taking into the mill. The pitch from groundwood has about the same stickiness as the pitch from the corresponding sulfite pulp. The amount of unsaponifiables was about the same, whereas the percentage of free acids decreased in the pitch from the sulfite pulp. Reprecipitation of pitch from spent liquor increased the pitch content of the pulp by 50%; however, it is indicated that such pitch is more easily washed out of the pulp by cold water. Volatile constituents of pitch appear to be lost during wood seasoning and thus make the pitch harder. Pitch troubles occur only when pitch is in the very tacky intermediate stage with regard to loss of volatile material. Microscopic examination of stained wood does not give a suitable indication of the amount of pitch in wood. 5 tables; original contains a bibliography with 19 references. J.W.S.

PLASTIC FILMS—TESTING

CUTLER, JANICE A., and MCLAREN, A. DOUGLAS. Permeation through and sorption of organic vapors by high polymers. Tappi 36, no. 9: 423-5 (September, 1953); *cf.* B.I.P.C. 22: 128.

Sorption data are reported for organic vapors in polymeric materials (polyvinyl alcohol, polystyrene, Geon, saran, Teflon, polyethylene, and nylon). From these data and previously published permeation data, diffusion constants are calculated. The sorption data are also analyzed from the point of view of current sorption and solution theory. 2 tables, 2 figures, and 13 references. E.S.

PLASTIC FILMS (NONCELLULOSIC)

TIERNAN, J. J. Merchants can find profits in specialty bags. Am. Paper Merchant 50, no. 9: 22-3, 74 (September, 1953).

Four examples of products packaged in printed polyethylene bags are described and their advantages in sales appeal pointed out. 4 illustrations. R.A.S.

PLASTICS

LEE, D. J. A., *and others.* Plastics. Repts. Progr. Appl. Chem. 37: 764-811 (1952); *cf.* B.I.P.C. 23: 118.

Members of the Plastics Group of the Society of Chemical Industry review the developments of 1952 under the following authors and titles: Lee, D. J. A. Plastics from natural polymers—1 table and 92 references, p. 764-74; Finn, S. R., and Musty, J. W. G. Polycondensation products—109 references, p. 774-90; and Gray, V. R. Polymerization products—450 references, p. 790-811. R.A.S.

OSTEN, —. Plastics as adhesives and impregnating agents. Neue Verpackung 6, no. 8: 365-8 (August, 1953). [In German]

The applications of plastics as wet-strength agents, adhesives for paper bags and labels, for coatings or laminations of multiwall bags, and the use of microcrystalline waxes alone or in admixture with plastic materials are reviewed. The fact is mentioned that completely water-vaporproof papers have not yet been developed. E.S.

PLASTICS—HONEYCOMB

ANON. Honeycomb's e-x-p-a-n-d-i-n-g future. Bakelite Rev. 25, no. 1: 16-18 (April, 1953).

New applications of honeycomb laminates (constructed from virgin kraft paper sheets by the Union Bag and Paper Corp.) are reviewed, including panels for building construction, doors, floors, roofs, furniture, bathtub bases, protective packaging materials, expendable pallets, and ventilated padding. 10 illustrations. E.S.

DOUGLAS AIRCRAFT COMPANY, *Santa Monica, Calif.* Corrugated kraft scores again. Boxboard Containers 71, no. 729: 42 (September, 1953).

A new structural material being marketed under the trade name of Aircomb is a honeycomb structure of kraft paper impregnated with a phenolic resin, sandwiched between thin facings of aluminum, stainless steel, magnesium, wood, plywood, plastics, or other materials. Aircomb can be shipped precut in any thickness from 1/16 to 5 inches and in any length; it is claimed by the company to be the strongest material in relation to weight now being manufactured, durable, fire and pest resistant, and has excellent insulation and soundproofing qualities. 2 illustrations. R.A.S.

FAHEY, D. J., DUNLAP, M. E., and SEIDL, R. J. Thermal conductivity of paper honeycomb cores and sound absorption of sandwich panels. Southern Pulp Paper Mfr. 16, no. 9: 40, 44, 46, 48, 50 (September, 1953); Paper Ind. 35, no. 6: 658-62 (September, 1953).

The paper presents the results of research work on thermal conductivity of paper honeycomb cores and ways of improving their insulation value. In addition, there are data on sound absorption of sandwich panels having solid and perforated facings. The thermal-insulation values of a honeycomb core were found to depend on the type of construction and its density. The thermal-insulation value improves somewhat when the cells are filled with foamed-in-place resin. The lowest value obtained compares favorably with that of common mineral wood products. Sandwich panels faced with hard facings, such as hardboard, have relatively no sound-absorption properties. Incorporating artificial perforations in one facing similar to those in ordinary acoustical tile, however, results in an appreciable increase in the amount of sound the panel absorbs. Utilizing the natural holes in white-pocket Douglas-fir veneer is also effective in increasing the acoustical value of the panel. Although the

sandwich panels with perforated facings absorb an appreciable amount of sound, the average sound-absorption coefficient is lower than the coefficient obtained on some of the common acoustical materials. 3 tables, 5 figures, and 5 references. E.S.

PLASTICS—PAPER-BASE

ANON. New Jacksonville Fourdrinier is fitted with St. Regis Panelyte. Paper Trade J. 137, no. 10: 19 (Sept. 4, 1953); Southern Pulp Paper Mfr. 16, no. 10: 46 (Oct. 1, 1953); *cf.* B.I.P.C. 23: 427.

Paper-base plastics (Panelyte) are used on the Beloit Fourdrinier machine of the St. Regis Paper Co. at Jacksonville, Fla. for breast-roll supports, the blades and mountings of the forming board, coverings for the aluminum table rolls, suction-box covers, deflector tips, doctor blades, and flexible shake connections. 1 illustration in the first reference. E.S.

PLASTICS—TESTING

WANDEBERG, E. Determination of the type of resin and carrier material of laminated plastics. Kunststoffe (Kunststoff-Praxis) 43, no. 4: 165-6 (April, 1953). [In German]

Simple laboratory procedures are described for determining the type of resin in a given sample by the smell of its combustion gases, the number of laminations by boiling in suitable solvents and converting the number of individual layers to that present in 1 mm. of the original thickness, and the type of carrier material (paper or fabric) by staining and microscopic identification. 2 tables and 3 references. E.S.

POLYMERIZATION

WINDING, CHARLES C., and WIEGANDT, HERBERT F. Polymerization. Ind. Eng. Chem. 45, no. 9: 2011-22 (September, 1953); *cf.* B.I.P.C. 23: 119.

The number of 1952 publications dealing with polymerization was approximately the same as for the previous year. The epoxy resins gained a foothold among the coating and adhesive resins. 557 references. E.S.

POPLARS

BRECHT, WALTER. The manufacture of groundwood pulp from poplarwood in the experimental groundwood mill. Holz Roh- u. Werkstoff 11, no. 8: 293-6 (August, 1953). [In German]

Following a brief review of earlier prewar studies with poplarwood in the experimental groundwood mill at Darmstadt, the data are compared with those resulting from a similar study on the grinding of quaking aspen at the U. S. Forest Products Laboratory at Madison in 1947 (*cf.* B.I.P.C. 18: 91). Recent German grinding experiments with wood blocks of poplarwood (*Populus robusta* and *P. marilandica*) (I) and sprucewood (II) 14.4 × 11.4 × 25 cm. in size, ground under identical conditions, showed that (I) with a naturally higher moisture content can be ground more readily and rapidly than (II). The well-draining stock with many well-preserved fibers (mean fiber length 0.75 mm.) contains a high percentage of screenings; the finest fraction consists principally of wood flour and does not contain mucilage like (II) groundwood pulp, so that all strength properties of (I) sheets are lower than those of (II) groundwood sheets. The sheets prepared from (I) are characterized by their relatively low specific gravity, their softness, and high

absorptivity; their brightness is inferior to that of (II). Even with an increase in grinding energy it does not seem possible to produce strong groundwood pulps from (I). The stock can be used where its softness is of advantage and its low strength does not matter a great deal, for instance in printing papers. Improvements in strength may be obtainable by blending the stock with slow (II) groundwood or lightly beaten sulfite pulp. The experiments are being continued along this line. 4 tables, 5 diagrams, and 4 references. E.S.

PRINTING AND PRINTER'S INK

ALDERSON, A. J. Paper and the printer; keep lavish schemes in perspective. Paper & Print 26, no. 2: 156, 158, 160, 162, 164 (Summer, 1953); *cf.* B.I.P.C. 23: 746.

The author emphasizes the need for most printers to examine present facilities for storage of paper stock. He points out that, whereas a controlled humidity principle may be advisable in a factory specializing in precision printing, the ordinary printing establishment need not be that lavish. Of most benefit to the majority of printers would be a careful check of utilization of present storage rooms and reorganization, if necessary, to use the facilities to their fullest capacity. 5 illustrations. R.A.S.

ASKEW, F. A. Print lamination processes. Brit. Printer 66, no. 392: 47-9 (September-October, 1953).

The surface lamination of preprinted sheets has the advantage of a very smooth glossy colorless coating of appreciable thickness and considerable strength. Problems which evolve in the process of applying this coating to the printed sheet are discussed, especially those which are caused by the type of ink used. Since there are different laminating processes, all with varying effects on the ink, the author recommends that the inkmaker be consulted and informed of the type of laminating process to be used in order that a suitable ink be employed in the printing. R.A.S.

KERNAN, J. M. [Chairman] Boxboard printing session of the 1953 Gravure Technical Association Convention. Am. Pressman 63, no. 10: 66, 68, 70, 72-5 (September, 1953).

The discussion which took place at the first session of the Boxboard Group or Division No. 2 of the Packaging Division of the association is recorded in the form of questions and answers. Problems concerning board (shrinkage, elimination of waste, handling, properties, and testing), operations (static elimination, maintenance of register and guide control, the checking of make-ready, and the control of lint and dust), ink (temperature and its effects), and cylinders (expected mileage, effect of rechroming, re-etching, and optimum depth of cells) are included. R.A.S.

LATHAM, CHARLES W. What you should know about lithographic inks. Am. Printer 134, no. 9: 44-5, 70-3 (September, 1953).

The composition of lithographic ink, the basic principles of drying on paper, metal, and other impervious surfaces, and the proper use of driers are discussed. On paper, drying takes place in two stages, i.e., setting and solidification of the liquid vehicle by oxidation and polymerization. The proper setting of inks depends on the correct relationship between the absorbency of the paper and the penetrating power of the ink vehicle. The final drying by oxidation and polymerization within practical time limits depends on the proper use of driers. Ordinarily, the paper is selected on the basis of require-

ments of the printed product, and the ink must be adjusted to the paper. 2 figures. E.S.

MACARTHUR, FULTON. What are the present and future paper needs for gravure printing? Paper Trade J. 137, no. 12: 56, 58 (Sept. 18, 1953).

The screens, ink, and presses used in the gravure process are described. Advantages and limitations of the process are outlined; necessary paper characteristics include smoothness; absorbent surface; uniform moisture content, caliper, and formation; and absence of abrasive particles. A great increase in the use of gravure is predicted as it is the only feasible competitive process to offset in the fine screen multicolor fields on paper and boxboard. R.A.S.

RADIOACTIVITY

COHN, F. [Basis-weight measurements with beta rays. II] The Betakomparator, a new control instrument for the paper industry. Svensk Papperstidn. 55, no. 9: 327-30 (May 15, 1952). [In Swedish] *cf.* abstracts below.

A Swedish instrument for measuring basis weight with beta rays is described in detail. 4 figures; references in part III. E.S.

HANSSON, KARL-FILIP. [Basis-weight measurements with beta rays. III] Basis-weight determination of paper with the Betakomparator LKB 3265. Svensk Papperstidn. 56, no. 15: 590-7 (Aug. 15, 1953). [In Swedish; English and German summaries] *cf.* abstracts above and below.

The continuous measurement of the basis weight of paper by the use of beta rays was studied with the aid of the Swedish instrument called Betakomparator LKB 3265. Certain modifications have been incorporated into the original model to improve the suitability of the instrument. The deposition of fibers on the windows of the radiation source (I) and the ionization chamber (II) could be prevented by the installation of a ventilation system involving an air jet which also eliminated condensation on the windows and maintained an equal temperature in the gap between (I) and (II). The rate of travel of the paper web was found to affect the measurements. At a basis weight of 55 g./sq. m. an apparent increase of 3% was observed when the speed of the paper web was increased from 1 to 200 m./minute; for a basis weight of 200 g./sq. m. the increase amounted only to 0.6%. A variation in the position of the web in the gap between (I) and (II) also influences the measurements. The magnitude of this effect (caused by the scattering of the beta particles as they pass through the sheet) depends upon the shape of the gap; the effect will increase the error in the determinations by 3-4%, when the web at a basis weight of 55 g./sq. m. is removed 10 mm. from the calibrated position. Methods of calibration are discussed. The instrument is preferably calibrated with a web running under conditions which correspond to those of actual operation. The accuracy of the instrument was found to amount to 1.5% for basis weights in the range of 50-65 g./sq. m. 10 figures and 29 references covering all three parts. E.S.

WESTERMARK, TORBJÖRN. Basis-weight measurements with beta rays. I. General review. Svensk Papperstidn. 55, no. 8: 278-86 (April 30, 1952). [In Swedish]

The fundamentals of the application of beta rays to the measurement of

basis weight of paper and board, suitable isotopes, and a Swedish instrument are reviewed. 1 table and 8 figures; references in Part III. E.S.

RAW MATERIALS

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS. Raw materials for more paper; pulping processes and procedures recommended for testing. FAO Forestry and Forest Products Study no. 6: 3-172 (April, 1953).

The information on raw materials for more paper is under two main headings: (*a*) pulping processes for fibrous raw materials from new sources and (*b*) procedures recommended for the investigation of new fibrous raw materials for paper. Subdivisions under the first heading are: fibrous raw materials in current use for pulp and paper (conifers, broadleaved woods, nonwood materials, and technical feasibility of broadening the field), pulping processes for wood (groundwood, semichemical pulps, chemical pulps, and other pulping processes), pulping processes for nonwood materials (procurement and storage of agricultural residues, raw-material preparation, and processes in commercial use), suitability of fibrous raw materials for different paper products (general considerations, short-fiber pulps, and specific uses), process cost estimates for pulping fibrous materials (wood and nonwood), case histories (tropical broadleaved woods, straw, sugarcane bagasse, and bamboo), and general conclusions and recommendations. The second part includes the following subdivisions: collection of samples (botanical identification and general description and sampling), raw-materials testing procedures (wood and other fibrous materials), pulping procedures (processes for wood, straw, bagasse, bamboo, and other nonwood materials), bleaching (multistage, single-stage, and groundwood bleaching, and testing methods), and pulp-testing procedures (chemical and physical tests). Of particular interest are the cost-data sheets showing estimated production costs of various raw materials by different processes. Numerous tables and graphs are included. R.A.S.

RAYON

ELLSWORTH, ROBERT E. In-fiber dimensional stability of rayon! Modern Textiles 34, no. 9: 32-3 (September, 1953).

The possible application of the Upson Co., Lockport, N.Y. method for preventing dimensional changes in cellulose materials caused by moisture (*cf.* B.I.P.C. 23: 594-5, patents by Walter P. Ericks) to the rayon industry is discussed; experiments have been started to test the possibility. 1 illustration. R.A.S.

FINLAYSON, D. Cellulose acetate from raw material to Haute Couture. J. Textile Inst. 44, no. 8: P307-26; discussion: P326-7 (August, 1953).

The development of the cellulose acetate industry from its establishment to provide dope for airplane wings to its adoption for use in fabrics acceptable to the designers of "Haute Couture" garments is described. Attention is drawn to the contributions to textile technology which have been made in the course of this development. Comparisons with viscose rayon are made where relevant, and the probable scientific explanation of the unique properties of acetate is given. 5 tables, 10 figures, and 24 references. E.S.

RESEARCH

PAPER MILL NEWS. Engineering and research. Paper Mill News

76, no. 38: 47-8, 50, 52, 54, 69-70, 72, 75-6, 79-80, 99-100, 102, 120, 122, 124, 126 (Sept. 19, 1953); *cf.* B.I.P.C. 23: 121-3.

Contributions of engineering and research during the past year at the many research institutions in this country engaged in projects directly related to the pulp and paper industry are presented. The following reports were contributed by the research institutions: Anon. Research at The Institute of Paper Chemistry, 1952-53—1 illustration, p. 48, 50; Anon. Kalamazoo College research, p. 50; Harker, Betty A. Recent results of pulp and paper research at the Forest Products Laboratory, p. 52, 54; Anon. Work done at Herty Foundation—1952, p. 54; Anon. Florida's role in research and development for paper industry—1 illustration, p. 69, 122, 124, 126; Anon. Michigan College research projects, p. 70; O'Neil, F. W. State University of New York, p. 72; Raphael, H. J. Experiments of Michigan State College, p. 72; Wiesehuegel, E. G. Some recent findings of TVA's forest research program, p. 75-6; Anon. Research projects conducted by Armour Research Foundation of Illinois Institute of Technology for the pulp and paper industry, p. 76; Anon. Progress report on Battelle research for the paper industry, p. 79; Vilbrandt, F. C. Research at Virginia Polytechnic Institute, p. 79-80; Zillig, Carl. Purdue studies strawboard waste sludge, p. 80; Wheelwright, William Bond. Paper engineering at Lowell Technological Institute—8 illustrations, p. 99-100, 102; and Anon. Research projects at U of Maine, p. 120. R.A.S.

RESEARCH LABORATORIES

ANON. The central laboratory of Stora Kopparbergs Bergslags Aktiebolag. Svensk Papperstidn. 56, no. 15: 584-5 (Aug. 15, 1953). [In Swedish]

A brief description of the research laboratories of the company in Falun is given. 7 illustrations. E.S.

ANON. Research; Champion blueprints the future in a program typical of the paper industry. Huber News: 3-12 (August, 1953).

Equipment, production processes, research, and testing procedures of The Champion Paper and Fibre Company are described. 25 illustrations. R.A.S.

WIGGINS TEAPE GROUP RESEARCH ORGANISATION. Papers for plastics. World's Paper Trade Rev. 140, no. 1: 36, 41 (July 2, 1953).

The activities of the Central Laboratories of the organization and the wide range of special papers (including some made of a certain proportion of synthetic and inorganic fibers) developed and manufactured by the company are reviewed briefly. 1 illustration. E.S.

RESIN, SYNTHETIC

MODERN PLASTICS. Where is vinyl acetate heading? Modern Plastics 31, no. 1: 103-5, 185-6, 188, 190-3, 198, 200 (September, 1953).

The versatile applications of either the monomer or polymer of vinyl acetate are discussed; most of its possibilities in the paper industry are related to its use as an adhesive or in combination with polyvinyl alcohol. Other applications include a coating for wallpaper to resist dirt and ink, for miniature sugar bags which can be heat-sealed around the edges, for grease-proofing board (which, however, must be handled with care to avoid blocking), and for magazine cover stock to produce a high-gloss coating (for which

some method must be found to prevent blocking before it can be commercialized). Asbestos paper saturated with polyvinyl acetate exhibits improved strength. 1 table and 3 illustrations. E.S.

OHL [FRITZ] Silicones in the packaging industry. Neue Verpackung 6, no. 8: 360-2 (August, 1953). [In German]

The manifold possible applications of silicones in the packaging industry are reviewed, with particular reference to water-repellent properties imparted to treated paper and board products; their use as antisticks for bags and containers filled with hot goods in molten condition which solidify on cooling (asphalt, rosin, waxes, etc.) is also mentioned. E.S.

ROSELLE HEMP

HAARER, A. E. Fibre production in wet and humid regions. Paper Making and Paper Selling 72, no. 2: 6-7, 10 (Summer, 1953).

The Gold Coast roselle, *Hibiscus sabdariffa* var. *altissima*, is discussed; it is recommended as more suitable than jute for growing in the moist humid atmosphere of equatorial parts of the world. The bark can be stripped by hand and the entire stalk used as pulp for papermaking; it gives a soft fiber of good luster and color, but is less flexible than jute and cannot be spun down to the finer counts. It has been used successfully to make a strong and durable coarse sacking. 3 illustrations. R.A.S.

SAFETY

BRAUN, FRED W. Lively safety promotion methods at Scott Paper Company. Paper Ind. 35, no. 6: 662-3 (September, 1953).

Safety promotion methods practiced at the Scott Paper Co. mill at Chester, Pa. are credited with reducing the number of lost-time accidents to a year's record of nine among 2117 employees. The program of constant visual safety reminders is described. 4 illustrations. R.A.S.

SALARIES

KELLER, J. A. Job evaluation for management and supervisory positions. Paper Ind. 35, no. 6: 670 (September, 1953).

The factors mentioned as having influence upon salaries paid for management-level positions are discussed under four groups: knowledge, ingenuity, and operating and administrative responsibilities. The difficulty of evaluating such positions is considered, but the program is stressed as a necessity to the encouragement of superior performance. R.A.S.

SALESMEN AND SALESMANSHIP

FRANKLIN, S. W. How to train your salesmen by modern tested methods. How to give your salesmen the tools of good salesmanship. How to train your salesmen to use psychology in selling. How to hold a sales meeting on the technique of 'the big five.' Paper & Paper Products 94, no. 18: 13-14 (June 5, 1953); 95, no. 2: 1, 10, 12-14; no. 3: 2, 16-17; no. 4: 2-3, 20; no. 5: 2-3, 10 (July 20, Aug. 5, 20, Sept. 5, 1953); *cf.* B.I.P.C. 23: 750.

The author stresses the need for the development of a sales training program as an aid to greater sales production and lower selling costs, sales per-

sonnel turnover, and less need for supervision. A four-week orientation program is described whereby the salesmen become familiar with the organization and products of the company; on completion, the sales training program commences, beginning with a products-knowledge course. Nine points of the framework of background knowledge which the author considers essential for the initial training of salesmen are discussed under the general headings of knowledge of product and knowledge of prospect. Use of up-to-date psychological knowledge is applied to salesmanship in analyzing the phase of approach to the prospect. The author then outlines an organized pattern of salesmanship which he calls the big five: pre-approach, approach, demonstration, handling objections, and the close. In the final article, these five steps are discussed in detail. The pre-approach analyzes problems of the prospect, ways in which the product can help the prospect, and the method of putting this across to the prospect. The second step stresses what salesmen must say in the first 30 seconds, mainly benefits to the buyer. Customer participation is suggested as the most effective method to use in the demonstration. Customers' objections are classified and various methods for meeting each type are given, and finally statements which may indicate readiness of the prospect to close the sale are listed. 7 illustrations. R.A.S.

SEMI-CHEMICAL PULPING PROCESS

McGOVERN, J. N., and SIMMONDS, F. A. Bleached semichemical pulps from mixed eastern hardwoods for use in high-grade bond paper. Tappi 36, no. 9: 385-90 (September, 1953).

Fully bleached neutral sulfite semichemical pulps were produced at the Forest Products Laboratory from a mixture of eastern hardwoods comprising black cherry, black and yellow birch, red and sugar maple, red and white oak, white ash, and beech. A pulping procedure employing preimpregnation of the chips with the cooking liquor and a three-stage bleaching treatment were used. Experimental bond papers made from the bleached semichemical pulp alone and from a blend of approximately equal amounts of the semichemical pulp and a commercial bleached spruce sulfite pulp compared favorably in strength and other properties, except for a slightly lower opacity, with a commercial no. 1 grade of bond paper made from the spruce pulp. It is concluded that 25% or more of bleached semichemical pulp from a broad eastern hardwood mixture can be readily used in no. 1 bond paper if the semichemical pulp is practically free of unbleached particles. A centrifugal separation treatment of the unbleached pulp effectively removed wood dirt and the short chunky type of shive that is difficultly bleached or resolved by practicable means. Neither the exclusion of oaks and ash from the chip mixture nor crushing of the raw chips between rolls before pulping resulted in reduction of the shive content of the pulps. The yield of bleachable neutral sulfite semichemical pulp from the hardwood mixture was 70%. Pulping characteristics and pulp strength were improved slightly by excluding the oaks and ash from the mixture, although pulp-sheet density was increased. The optimum freeness for fiberizing with respect to shive condition and bleach requirement of the unbleached pulp was 675 to 700 ml. (Schopper-Riegler scale). Bleached semichemical pulp was obtained in about 55% yield, based on the wood. Its strength compared favorably with that of the commercial softwood sulfite pulp, except for a relatively low folding endurance. 7 tables and 4 references. E.S.

SHERARDIZING

WILLIAMS, A. E. Sherardising; its application in the paper mill. World's Paper Trade Rev. 140, no. 3: 184, 186, 191-2 (July 16, 1953).

The advantages of sherardizing (the zinc applied in the process forming an alloy with the ferrous base metal) over other available methods of zinc coating, particularly the uniformity and very high resistance to abrasion of the coat, are outlined. The process is limited to articles which can be packed into drums about two feet in diameter. When heated in a furnace kept at a temperature just below the melting point of zinc (419°C.), an amalgamation of the zinc dust and the iron or steel surface occurs. The processing, sherardizing mixtures, and typical applications are described. 3 figures. E.S.

SHIPPING CONTAINERS

REYNOLDS METALS COMPANY, *Louisville.* Advantages claimed for foil-lined boxes. Boxboard Containers 71, no. 729: 40 (September, 1953); Fibre Containers 38, no. 9: 62, 64 (September, 1953).

The company claims a method for safe shipment of certain citrus fruits (Valencia oranges and lemons and Arizona and California grapefruit) without refrigeration or need for ventilation. On the basis of an extensive research and testing program, tests have proved that through the use of aluminum foil-lined cardboard shipping containers, weight, appearance, quality, and flavor of the fruit are maintained during shipment and storage at ordinary temperatures for 30-60 days or longer, also that ventilation is not usually necessary. The fruit need not be wrapped individually. 1 illustration in the first and 5 in the second reference. R.A.S.

SHIPPING CONTAINERS—FIBER DRUMS

KURZ, MANFRED. Lightweight drums, as seen at the Chicago Packaging Show. Verpackungs Rundschau no. 7: 286-7 (July, 1953). [In German]

The author compares German and American practices in the application of lightweight drums, with particular reference to the manufacture, closure, and uses of fiber drums. The latter, especially the small sizes, are generally single-use containers. E.S.

MATHER, GLENN, and FIBRE CONTAINERS. Fibre drum industry statistics. Fibre Containers 38, no. 8: 215-16, 218-19 (August, 1953); *cf.* B.I.P.C. 23: 125-6.

The fiber-drum industry also experienced a slight drop in production in 1952; the volume was 3% below 1951 and 6% below the peak production of 1950. Production for the first half of 1953 is on the upgrade again, and the development of new uses for fiber drums contributes to a bright 1953 outlook. The development of new uses is largely attributed to plastic bag liners in drums and plastic liners, new sales and buying personnel uninhibited by old traditions, rising freight rates which make reduction in tare weight of greater importance, and a new demand for efficient tight containers for use with desiccants and/or volatile corrosion inhibitors for certain metal products. The regulations in rail-freight shipping and modifications made possible with the new improvements in fiber drums are discussed. 3 tables, 1 graph, and 2 illustrations. R.A.S.

SHIPPING CONTAINERS—MULTIWALL BAGS

J. M. HUBER CORPORATION. A new look for carbon black. Huber News: 14-17 (August, 1953).

One of the company's products, carbon black, is now being packaged in a shaped valve-type bag, claimed to give more stable and compact unit-load shipments with substantial space savings. 12 illustrations. R.A.S.

SHIPPING CONTAINERS—STATISTICS

HANWAY, PAUL S., and FIBRE CONTAINERS. Fibre can and tube industry statistics. Fibre Containers 38, no. 8: 213-14 (August, 1953); *cf.* B.I.P.C. 23: 125.

The dollar sales volume of fiber cans, tubes, cores, etc. established an all-time high record for the first four months of 1953. Gross over-all sales showed a decrease from $122 million in 1951 to $120 million in 1952, a drop similar to that experienced in the rest of the industry; however, most emphasis is placed on expectations for 1953 when a combined dollar sale of 145 million is considered possible. Greatest price decreases occurred in ammunition containers, and greatest increases in the can division, including the manufacture of defense products. The industry has organized a committee to study ways and means to advance product development to add new characteristics to cans, tubes, etc., and another phase of studies, soon to be undertaken, will be that of improved public relations. 2 tables and 1 graph. R.A.S.

SAWYER, WALTER M., and FIBRE CONTAINERS. Fibre box industry statistics. Fibre Containers 38, no. 8: 150-1, 154, 156, 158, 160, 162, 164-6, 168-9 (August, 1953); *cf.* B.I.P.C. 23: 125.

The author reviews briefly the history of the manufacture of fiber containers, sizes and types first produced, and original equipment. He views the growth of the industry as a series of trends, the latest advancements showing a trend toward development of the use of plastics, resins and aluminum-foil coatings, barriers, and laminations. Charts and tables give the statistical picture of the industry in 1952 as compared with previous years. Fiber box plant production, like other divisions of the industry, decreased; 1952's total was 5,660,800 tons as compared with 5,837,800 tons in 1951. The decline in the fiber-box industry began earlier than in the other divisions; the peak was reached in 1950. The V-box production, which reached a peak in 1951, also declined (32% in tonnage). 22 tables, 6 figures, and 1 map. R.A.S.

SHIPPING CONTAINERS—TESTING

KLINGELHÖFFER, HANS. The recording of transport shocks. Neue Verpackung 6, no. 1: 16-19 (January, 1953). [In German]

The author describes several instruments for recording the impact to which packages are subjected during transport, including the French Mors indicator, the shock recorder developed by PATRA, an impulse recorder developed by the Institut für Lebensmitteltechnologie at Munich, and the Cornet system used in railway cars. The limitations of these instruments are discussed, and the need for small recording instruments to be used in individual containers is emphasized. Attention is also drawn to the fact that individual recordings for the testing of different packaging methods cannot be applied to the assessment of methods of transportation (railway, truck, or air-freight shipments). 5 figures. E.S.

SLIME PREVENTION

HERSCHLER, R. J. Microbiological control studies—evaluation of a new biocide. Tappi 36, no. 9: 163-6A (September, 1953).

A new chemical biocide, 3,5-dimethyltetrahydro-1,3,5,2H-thiadiazine-2-thione (35-D), has been laboratory evaluated, mill tested, and shown to be suitable for use as a slime-control agent in pulp and paper mills. It is effective at low concentrations, possesses low toxicity to warm-blooded animals, is easily handled, and imparts no odor, off-color, or taste to pulp and paper. It is

effective against bacteria and fungi, including yeasts, and characterized by a slow rate of kill. 35-D is nonfoaming and not significantly corrosive to metals or alloys used by the industry. Continuous feeding to the system afforded the best results. 7 tables and 5 references. E.S.

LUNEVALE PRODUCTS LTD., *Lancaster, England.* A new Mycocide, making slime control more economical. World's Paper Trade Rev. 140, no. 6: 409-10 (Aug. 6, 1953).

In addition to the slimicides Mycocide A and Mycocide DG, a more economical type, Mycocide E, has been introduced for the control of slime formation in paper and board mills. All three are organomercurials; Mycocide E is claimed to be more soluble and powerful and to penetrate to all parts of the system in a dissolved state. Being toxic to human beings, it is packed in sealed dustproof cartons holding approximately one ounce of the slimicide; these cartons are packed in special sealed tins with the contents very plainly marked. The recommended way of using Mycocide E is to toss the unopened carton into the beater or pulper where the packaging material is disintegrated and the contents are thoroughly mixed with the stock. 2 illustrations. E.S.

SMALL ORDERS

SCHULMAN, WALTER. A cure for small orders. Paper Sales 13, no. 8: 16 (August, 1953).

Since small orders result in a loss for the paper merchant, the Levin Brothers Paper Co. placed a minimum of $25 on all orders taken on new accounts. The author gives the advantages which resulted from this policy. R.A.S.

STATISTICAL METHODS

BICKING, CHARLES A., and TRELFA, RICHARD T. Some influences of paper machine design and operation on variability of paperboard. Ind. Quality Control 10, no. 2: 17-19 (September, 1953).

Basis-weight variability was studied using moving-range control chart techniques. Samples taken from each reel of daily production indicated a basis-weight peak at the beginning of each shift, with a consistent downward trend as the shift progressed. An educational program, regular use of control charts, and installation of improved control equipment contributed to minimizing these shift cycles. Sixty-eight samples cut from a 70-foot (wire length) sample of a reel showed cycles which were repeated every 50 inches (attributed to out-of-round, 16-inch diameter rolls) and every 10 feet (minimized by headbox changes and by throttling white water and pulp-slurry pumps). Samples cut 132 inches long from 35 consecutive 70-foot sections revealed a cycle which peaked every 350 feet. This cycle could not be explained, but was reduced by correcting the short-term cycles. An over-all reduction in basis-weight variability during a six-month period from $\pm$ 6.3% to $\pm$ 2.3% resulted from these corrective measures. 5 figures and 6 references. R.K.E.

LANGMAID, JOHN F., JR. A quality control program. Tappi 36, no. 9: 151-4A (September, 1953).

The process quality-control program set up by the S. D. Warren Co., Cumberland, Maine is described. An example of the practical use of the standard deviation and the selection of the proper limits in paper testing is given. 1 table. E.S.

STOCK PREPARATION

MUSCHLITZ, GRANT D., DAMMANN, KARL, and ROBINSON, ROBERT D. Paterson parchment mill uses an unusual continuous pulp preparation system. Paper Mill News 76, no. 35: 10, 12 (Aug. 29, 1953).

The author describes the continuous stock-preparation system for producing waterleaf base paper for Patapar vegetable parchment from virgin pulp and virgin broke (high α-cellulose wood pulps or high-grade cotton rags and cotton linters for special products), involving a Hydrapulper, Hydrafiners, Dirtecs, and the necessary auxiliaries. 1 flow diagram. E.S.

STRAIN GAGES

NOLAN, ROBERT W. Strain gages. Chem. Eng. 60, no. 9: 217-28 (September, 1953).

The fundamentals and applications of strain gages for measurement and control are outlined. 22 figures and 26 references. E.S.

STRAINS AND STRESSES

KÄGI, HEINRICH. The stress-strain curves in materials with fibrous structure, textiles, leather, paper. Textil-Rundschau 8, no. 4: 168-76; no. 5: 233-42 (April, May, 1953). [In German]

The author introduces his discussion of stress-strain curves with descriptions of the load-elongation behavior of a spring and of a bar of iron and with the related definitions of proportional limit, elastic limit, and elastic modulus. He notes that the continuously curved load-elongation curves of fibrous materials show no proportional or elastic limits and that the curves are determined not alone by the nature of the material but also by the conditions of test. Behavior during repeated cycles of loading and unloading and the significance of total, elastic, and permanent elongation are discussed. The author defines the degree of elasticity as the ratio of the unit elastic to the unit total elongation and discusses the elasticity curve obtained by plotting elastic elongation as a function of total elongation. The average degree of elasticity is defined as the ratio of the area under the elasticity curve of the test material to the area under the perfect elasticity curve (a line of unit slope passing through the origin). The relationships between tensile strength, breaking length, and loaded length (the length of the stressed specimen whose weight equals the tensile strength) are discussed. The instantaneous elastic modulus is introduced which is equal to the product of the initial specimen length and the slope of the stress-strain curve at the strain or unit elongation selected. The difficulty of determining the stress in a specimen, because of the uncertainty in the cross-section of the specimen, is avoided by introducing the elastic length, a quantity analogous to breaking length. The rupture energy, the area under the load-elongation curve, and the work of elastic and permanent deformation are discussed. 19 diagrams. G.R.S.

STRAW

JAYME, GEORG, and SCHEURING, LUDWIG. Acetate pulps from cereal straw. II. Influence of silica content. Das Papier 7, no. 15/16: 298-305; no. 17/18: 347-51 (August, September, 1953). [In German; English and French summaries] *cf.* B.I.P.C. 24: 54.

To determine the reasons for the unsatisfactory behavior of bleached but nonpurified cereal-straw pulps on acetylation, wheat straw was separated into

its botanically identifiable components: stems, nodes, stems without nodes, leaves, and spikes. These fractions were investigated with regard to percentage by weight on total straw; content of ash, silica (I), and silica insoluble in caustic soda (II); behavior during prehydrolysis-sulfate pulping; chemical data of bleached pulps obtained by multistage bleaching processes; and their suitability for conversion into clear primary acetate solutions. The data indicate that the leaves contain 52.9%, the spikes 17.1%, the nodes 4.8%, and the stems without nodes 25.2% of (I) present in straw. Correspondingly, the leaves give low yields of dark-colored and hard-to-bleach pulps with a high percentage of (I). When the leaves and spikes are removed prior to digestion, high-quality, acetylating-grade pulps without cold-hot purification may be obtained. It was also found that not only the presence of (I), but particularly the percentage of (II) in (I) determines the acetylating behavior of the bleached straw pulps. The leaves contain almost 72% of (II) present in the entire straw. The removal of the leaves permits a considerable improvement of the starting material for chemical conversion by comparatively simple means. This fundamental study was performed to determine the possible application of straw pulps to acetylating procedures and methods to be employed for this purpose; it was not intended to recommend the process for its economic feasibility. 17 tables, 9 diagrams, and 11 footnotes. E.S.

STREAM POLLUTION

CAREY, W. GORDON. Sewage, river pollution and trade wastes. Repts. Progr. Appl. Chem. 37: 33-41 (1952); *cf.* B.I.P.C. 23: 127.

The progress made in 1952 in the prevention of river pollution, sewage purification, pre-aeration and air flocculation, detergents, trade effluents, and treatment of industrial wastes is reviewed. 28 references. R.A.S.

HELMERS, E. N., ANDERSON, E. J., KILGORE, H. D., JR., WEINBERGER, L. W., and SAWYER, C. N. Nutritional requirements in the biological stabilization of industrial wastes. I. Experimental method. Sewage Ind. Wastes 22, no. 9: 1200-6 (September, 1950).

A consideration of nutrition is believed to be of importance in the design and operation of biological treatment plants for the stabilization of industrial wastes or industrial waste-sewage mixtures. A program of research has been designed to determine the nutritional requirements of activated sludge and trickling filters in the stabilization of several industrial wastes and to correlate nutritional supply with process efficiencies. The apparatus and experimental method used in these studies are described. Results concerning specific industrial wastes will be considered in future papers. 2 tables, 2 figures, and 13 references. E.S.

HELMERS, E. N., FRAME, J. D., GREENBERG, A. E., and SAWYER, C. N. Nutritional requirements in the biological stabilization of industrial wastes. II. Treatment with domestic sewage. Sewage Ind. Wastes 23, no. 7: 884-99 (July, 1951).

Experiments were conducted on a laboratory scale using activated sludge for the stabilization of industrial waste-domestic sewage mixtures containing variable amounts of industrial waste. Three different industrial wastes were used (cotton-kiering waste, rag-rope pulping waste, and a brewery waste). All experiments were carried out with three feedings a day followed by seven-hour aeration periods and with an aeration solids concentration of 1500 p.p.m. Temperatures of stabilization were controlled at 10, 20, and 30°C. Nutritional requirements of the activated sludge in terms of nitrogen and phosphorus were

computed for different conditions of B.O.D. loading and temperature. The effects of high industrial waste loadings and nutritional deficiencies on the treatment process efficiency as measured by percentage B.O.D. reduction and activated-sludge characteristics were determined. An attempt was made to relate B.O.D. loading and the rate of activated-sludge growth. The availability for sludge growth of the organic nitrogen contained in the waste and sewage was also studied. 8 tables, 4 figures, and 5 references. E.S.

HELMERS, E. N., FRAME, J. D., GREENBERG, A. E., and SAWYER, C. N. Nutritional requirements in the biological stabilization of industrial wastes. III. Treatment with supplementary nutrients. Sewage Ind. Wastes 24, no. 4: 496-507 (April, 1952).

Laboratory experiments were carried out using activated sludge to study the treatment of certain industrial wastes deficient in nutritional elements without benefit of mixture with large amounts of domestic sewage. Conditions of treatment were designed to be comparable to conditions that might exist in an industrial treatment plant. Supplementary nutrients were added in varying amounts in the form of inorganic salts of nitrogen and phosphorus. The same three wastes as in the previous part were studied, and the same experimental conditions were observed. Chlorine was added in some instances to control sludge bulking. The effect of different amounts of supplementation on rate of B.O.D. removal and other treatment process variables was studied. Critical nitrogen requirements were computed and compared with maximum requirements determined in previous work, and a simple diagnostic method for determining the magnitude of a nutritional deficiency was developed. 8 tables, 3 figures, and 2 references. E.S.

KILGORE, HAROLD D., JR., and SAWYER, CLAIR N. Nutritional requirements in the biological stabilization of industrial wastes. IV. Treatment on high-rate filters. Sewage Ind. Wastes 25, no. 5: 596-604 (May, 1953).

Laboratory-scale experiments were conducted on the stabilization of industrial wastes by the two-stage, high-rate trickling filter. The industrial wastes studied included a bleachery waste and a rope-pulp cook waste, in addition to the previously used cotton-kiering and rag-rope pulp cook wastes. All wastes were treated in conjunction with domestic sewage. In addition, the cotton-kiering waste was treated without admixture with domestic sewage. The nitrogen and phosphorus requirements of the waste and waste-sewage mixtures were calculated and compared with comparable data gathered on the activated sludge process. Effects of nitrogen deficiencies were examined with relation to filter efficiency, and relationships between nitrogen and phosphorus utilization investigated. The effect of a marked nitrogen deficiency on the seeding of a high-rate trickling filter was also investigated. 7 tables, 1 figure, and 13 references. E.S.

MURDOCK, HAROLD R. Industrial wastes. Ind. Eng. Chem. 45, no. 9: 107-9A (September, 1953).

Following a general discussion on the interpretation of water pollution by officials of five different states, the decentralized control of California (which established nine different regional control boards for each major watershed within the state) is described. California terms the health aspect (I) as contamination and the conservation of water quality for beneficial purposes (II), pollution. (I) requires immediate correction, whereas (II) permits a more deliberative study of the economic equity between the several parties involved. Although California made an important step forward toward a clear

interpretation of pollution, it is not of much benefit to the industrialist who desires specifications in numerical values on water quality at a specific plant site and of the minimum water conditions which will be tolerated after he purges his waste. E.S.

SULFATE MILLS

PAPER TRADE JOURNAL. Harmac starts up pulp mill expansion. Paper Trade J. 137, no. 13: 14-16, 18 (Sept. 25, 1953); *cf.* B.I.P.C. 24: 55.

The new units of the MacMillan and Bloedel bleached kraft pulp mill (three chip-handling silos; eight new digesters; a second blow tank; additional brown-stock washers and screens; three Kamyr high-density bleach towers; a second Dominion Engineering Fourdrinier machine with a 15-deck Flăkt drier; warehouse extensions; a second Dorr continuous causticizing system, Combustion Engineering recovery furnace, and electrostatic precipitator; new evaporators; and additional electric power and water supplies, including auxiliary machinery) began operating in September, 1953. The expansion more than doubles the output of the mill which is now one of the largest producers of high-white papermaking grades of kraft market pulp. 4 illustrations of the mill and equipment. E.S.

PAPER TRADE JOURNAL. How International at Natchez doubled pulp production. Paper Trade J. 137, no. 7: 26-8 (Aug. 14, 1953); *cf.* B.I.P.C. 21: 117.

The new installations involved in the expansion program of the dissolving sulfate pulp mill at Natchez, Miss. of the Southern Kraft Division of the International Paper Co. are described briefly. The new unit is almost a complete duplication of the original mill, which will be producing approximately 300,000 tons of dissolving pulp annually. 3 illustrations. E.S.

SULFITE MILLS

WRIGHT, C. E. Special construction features of Rayonier's Jesup plant. Paper Trade J. 137, no. 13: 21-2 (Sept. 25, 1953); *cf.* B.I.P.C. 22: 946-7.

Construction of the new dissolving-pulp mill at Jesup, Ga. is reported to be progressing on schedule. One of the unusual features in the preparation of the plant site is mentioned involving the compaction of the loose sandy soil by the Vibro-flotation method by Sergey Steuerman of New York. The erection of four circular prestressed tanks and a 250-foot high, brick-lined concrete chimney is also described. 1 illustration. E.S.

SULFITE WASTE LIQUOR

HEARON, W. M. Progress in the utilization of spent sulphite liquor. Tappi 36, no. 9: 14A, 16A, 18A, 20A (September, 1953).

The sulfite pulping process uses a mixture of metallic bisulfite (usually calcium) and sulfurous acid to dissolve the lignin. The lignin, as lignosulfonic acid, sugars concurrently dissolved, and inorganics are removed from the pulp and form the main constituents of the spent sulfite liquor. About 25 million tons of this liquid with 10% solids are annually available for utilization. The liquor represents potentially a huge source of organic chemicals. This has led to a vast published literature on the use of spent sulfite liquor as such or as a starting material for other preparations, but very little of the literature results have reached commercial practice. In the past, all the spent liquor has been

discharged into waterways. With the growing stress on stream improvement, more effort and of a higher scientific caliber has been exerted to utilize the spent liquor profitably. However, as no use has developed of sufficient magnitude to require nearly all the liquor, most sulfite-pulp producers have resorted to other means to alleviate the stream pollution situation. These measures are not discussed. Several paper companies are, however, partially utilizing their liquor by profitable sale. The binding properties of the liquor have been of value in its use for surfacing dirt roads, and for making gummed tapes, briquets, and foundry cores. The dispersing action of the lignosulfonic acids allows their use in making cement, in gypsum wallboard, in the dyeing of fabrics, as a treatment for boiler water, as a dispersing agent for carbon black in rubber, for controlling the viscosity of oil-well drilling muds, and as a dispersing agent for insecticide-remittable powders. The spent liquor also finds use as a chemical raw material, including vanillin and alcohol. A large pilot plant employs the liquor as a food for producing torula yeast. Intensive research on spent sulfite liquor and on lignin continues in many industrial and scholastic laboratories. Unless some major use for spent sulfite liquor as such is found, any future large-scale utilization of it will have to depend on its conversion to bulk organic chemicals. 2 tables and 45 references. E.S.

SULFITE WASTE LIQUOR—BIBLIOGRAPHY

MARSHALL, H. BORDEN, and NEATE, JANETTE M. The utilization of waste sulphite liquor; a bibliography of the literature published during 1952. Parts I and II. Pulp Paper Mag. Can. 54, no. 7: 125-35; no. 9: 113-26 (June, August, 1953); *cf.* B.I.P.C. 22: 775.

An annotated bibliography of literature published during 1952 is presented under the subject headings: ammonia-base process, base-exchange materials, binding materials, chemicals, emulsifying and dispersing agents, fermentation, fertilizers, and hydrogenation in the first part, and initial treatment of spent sulfite liquor, laboratory investigations, magnesium-base process, miscellaneous uses, pollution studies, tanning materials, and review articles in the second. 217 references. R.A.S.

SYNTHETIC FIBERS

MOISSON, GEORGE M., and SCOTT, RICHARD C. 1953 synthetic-fiber table reflects two years of research. Textile World 109, no. 9: 109-28 (September, 1953); *cf.* B.I.P.C. 22: 140.

A revision of the 1950 chart by Newell and of the additional information by Scott is presented. 1 main and 10 supplementary tables and 1 chart depicting the fiber family tree. E.S.

VANILLIN

BRICKMAN, W. J., and PURVES, C. B. The conversion of veratraldehyde to vanillin by nitrobenzene and alkali. J. Am. Chem. Soc. 75, no. 17: 4336-7 (Sept. 5, 1953).

Veratraldehyde was oxidized with nitrobenzene and 2 *N* alkali at 160°C. by the micromethod of Stone and Blundell (*cf.* B.I.P.C. 21: 689-90). Aliquots of the reaction mixture were spotted on paper, acidified with acetic acid vapor, and developed with *n*-butyl ether saturated with water. The spots were located with 2,4-dinitrophenylhydrazine spray and then determined by the ultraviolet absorption method of Lemon (*cf.* B.I.P.C. 18: 268). Results indicate that veratraldehyde is converted to vanillin in at least 30% yield. In a larger-scale experiment vanillin 2,4-dinitrophenylhydrazone was recovered. 9 footnotes. I.A.P.

VISCOSITY

MILL, C. C., and GATES, E. R. Temperature effects in a rotation viscometer. Anal. Chem. 25, no. 9: 1390-3 (September, 1953).

In the early stages of work designed to study the rheology of printing inks using a rotation viscometer, it was observed that even with simple oils the viscosity tended to decrease at higher shear rates. A thermocouple inserted in the bob indicated a rise of temperature when the power input exceeded a critical value, and experiments were undertaken to determine the magnitude of the heating effect, the manner in which it affects the rheological data, and a simple method of correction. The data recorded in an experiment can be corrected simply if the temperature coefficient of viscosity and the equilibrium temperature of the bob are known, the method applying to pigmented systems as well as to simple oils. The use of the technique shows that part of the hysteresis loop previously reported with suspensions is due to temperature changes during the experiment. 2 tables, 6 figures, and 10 references. E.S.

WASTE HEAT

THOMSON, A. G. Recovery of waste heat in paper mills. World's Paper Trade Rev. 140, no. 3: 179-80, 182 (July 16, 1953).

Four types of heat-recovery systems developed by the Foster Wheeler Corp. for condensing digester-blowdown steam and transferring the heat to wash water (the direct-contact, the surface-condenser, the liquid-to-liquid, and the vapor-to-liquid systems), and their advantages and shortcomings are reviewed briefly. 3 diagrams. E.S.

WASTE PAPER

BECKWITH, WILLIAM H., and FIBRE CONTAINERS. Wastepaper statistics. Fibre Containers 38, no. 8: 94-5, 99-100, 102, 104, 106 (August, 1953); *cf.* B.I.P.C. 23: 132.

Waste-paper consumption during 1952 was 13% below 1951; however, the figure was higher than for any other year, except 1947, 1950, or 1951. This decreased consumption is charged to a decrease in demand and the quality of the waste paper itself. In addition to the fact that the entire industry has experienced a slump in the past two years, the decrease in waste-paper use in production amounts to 23%. The total waste-paper consumption figure was 7,881,000 tons, as compared with last year's record high of 9,078,900. Consumption by the various users decreased approximately proportionately, 5,991,400 tons being used for paperboard, 733,600 for roofing, and 1,156,000 for paper. A similar decrease is evidenced in the statistics showing average annual waste-paper prices/ton in the Chicago area, the greatest decrease being in the No. 1 kraft paper in which the price/ton dropped from $51.79 to $19.98. A slight incline beginning in 1953 and emphasis on better grades of waste paper brighten prospects for the future. 7 tables and 7 graphs. R.A.S.

WATER-MARKS

SMITH, VINCENT S. An introduction to a subject of absorbing interest to many buyers of printing: watermarks. Brit. Printer 66, no. 392: 55-9 (September-October, 1953).

Information is given on the early history of the use of the watermark which began in the late 13th century, with special emphasis on its use in England. Methods of producing the watermark are described, from the original handmade methods to the present dandy roll. The value of water-

marking as security against forgery is pointed out and illustrated with a well-known example. Arguments are presented supporting the view that most ancient watermarks are symbolic. 4 figures showing standard sheet positions of watermarks, 12 of watermarks, and 7 references. R.A.S.

WAXES

ANON. The wax consumption in the packaging industry increases. Neue Verpackung 6, no. 6: 303-4 (June, 1953); Das Papier 7, no. 13/14: 270-2 (July, 1953). [In German]

The different types of mineral, plant, synthetic, and animal waxes; their origin and principal properties; and possible applications in the paper and board industry are reviewed briefly. E.S.

WET STRENGTH

BARBER & BAAR ASSOCIATES, INC., *New York*. Melamine-formaldehyde resins for use in wet-strength papers. Paper Ind. 35, no. 6: 668-9 (September, 1953); *cf.* B.I.P.C. 23: 922.

The important physical and chemical properties of melamine resin, applications in the paper industry, and the properties of the treated papers are summarized. 1 table and 4 figures. E.S.

WOOD—CHEMISTRY

WISE, LOUIS ELSBERG. Symposia on the chemistry of wood and pulp. Paper Ind. 35, no. 6: 664-7 (September, 1953).

The report covers briefly papers and excursions of interest to the paper industry which were a part of the symposium on Wood Chemistry at the 13th International Congress of Pure and Applied Chemistry held in Sweden. Group discussions dealing with the minor constituents of wood, chemistry of the bark, xylans, tall oils and resins, cellulose, pulp properties, nonwoody fibers, lignin and its properties, and aspen delignification are reviewed. 4 illustrations. R.A.S.

WOOD—EXTRACTIVES

BROWNING, B. L., and BUBLITZ, L. O. Extractives of aspenwood and bark. Tappi 36, no. 9: 418-19 (September, 1953).

The extractives of aspenwood and oak include a considerable portion soluble in ether and of high fatty-acid content. This portion often contributes to the formation of hardwood pitch and may upon mixture with resins from size or from softwood pulps yield products of an extremely tacky character. Seasoning markedly decreased the ether-soluble material in both wood and bark. 2 tables and 6 references. E.S.

KURTH, E. F. Quercetin from fir and pine bark. Ind. Eng. Chem. 45, no. 9: 2096-7 (September, 1953).

Dihydroquercetin, which is a substantial constituent of Douglas-fir and Jeffrey pine barks and is present in Douglas-fir heartwood, interferes with the commercial pulping of wood with calcium bisulfite liquor. An exploration of the action of bisulfites on dihydroquercetin has shown that it is rapidly oxidized to quercetin, which is now extracted commercially from flowering buckwheat in this country. Approximately 90% conversion may be obtained within one hour by refluxing with the alkali metal bisulfites or ammonium bisulfite. Pure crystals of quercetin separate from either hot sodium, potas-

sium, or ammonium bisulfite liquors, whereas an insoluble scale separates from calcium bisulfite liquor. The reaction is unique in that the bisulfite reducing agents unexpectedly remove two hydrogens from dihydroquercetin, and appears applicable to all 3-hydroxy flavanoids with a carbonyl group in the 4-position. It affords a simple process for producing quercetin from presently neglected abundant bark raw materials. 1 table and 9 references. E.S.

WOOD OPERATIONS

BUSCH, T. N. Pulpwood handling with rubber-mounted loading devices. Pulpwood Annual: 15-16 (1953).

The need for pulpwood-loading and -unloading devices in the South and progress made to date are discussed. 8 illustrations. E.S.

SOWERS, DAVID W., JR. Use of stationary & crawler pulpwood loaders. Pulpwood Annual: 17-18, 20-1 (1953).

The author discusses some of the most promising types of stationary and crawler-type loaders, including the factors and conditions peculiar to their most efficient use. 5 illustrations. E.S.

WOOD TRANSPORTATION

GIBSON, M. C. Small tractor use in pulpwood logging. Pulpwood Annual: 5-6 (1953); Pulp and Paper Manual of Canada 21: 51, 53 (1953).

The experience of one company with small crawler tractors and small and medium-sized wheel tractors in operations throughout the Piedmont section and eastern coastal areas of the Carolinas is discussed. Small wheel tractors were found to be the most efficient. 3 illustrations in the first reference. E.S.

POLLARD, L. E. [Moderator] Single axle and double axle drive trucks vs. semi truck trailer units. Pulpwood Annual: 22-4 (1953).

A panel discussion is presented, in which H. H. Flickinger, C. H. Christie, F. M. Crocker, and C. E. Mittell participated. 3 illustrations. E.S.

WOOD WASTE

GUERNSEY, F. W. Utilization of sawmill residue in the southern coast region of British Columbia. Can. Dept. Resources and Develop. Forestry Branch. Forest Products Labs. Div. Bull. no. 109: 30 p. (1953).

The results of this survey show that sawmill residue is now used in the form of slabs, edgings, and trims for broom-handle squares, lath, shingle bands, solid fuel, and the manufacture of pulpwood and chips and in the form of sawdust, hogged fuel, and shavings as fuel. Potential uses for sawmill residue are also described. These include distillation of wood, alcohol from wood residue, building boards from sawmill residue, sawdust and shavings as fertilizer, wood flour, and sawdust concrete. 13 tables, 4 figures, 1 map, and 17 footnotes. R.A.S.

KOEPP, W. H. Chips from logging operations. Pulpwood Annual: 24-5, 27-8 (1953).

The author discusses economic and technical reasons for the neglect of wood waste as a raw material, present utilization of logging residues in the

different regions of the United States, the economic feasibility of chipping in the woods, and required technical developments in the future. 8 references. E.S.

TROWBRIDGE, K. S. [Moderator] Significance of woods and mill waste on pulpwood supplies. Pulpwood Annual: 31-4 (1953).

A panel discussion is presented in which W. R. Warner, H. R. Josephson, C. S. Herr, and Walter H. Koepp participated, following the reading of information on the Andersson and Carpenter barkers supplied in a letter by the Soderhamn Manufacturing Co., Talladega, Ala. 3 charts. E.S.

WARNER, W. R. Utilization of sawmill waste. Pulpwood Annual: 28, 30-1 (1953); *cf.* B.I.P.C. 23: 400.

The author describes the experience of the Southern Lumber Co. at Warren, Ark. in debarking logs with an Andersson barker, chipping the sawmill waste, and selling it to paper mills. 4 illustrations. E.S.

XYLAN

BISHOP, C. T. Crystalline xylans from straws. Can. J. Chem. 31, no. 9: 793-800 (September, 1953).

Hemicelluloses, extracted from barley, flax, oat, rye, and wheat straw holocelluloses, were composed predominantly of anhydro-D-xylose units, with small amounts of L-arabinose and D-glucuronic acid. The hemicelluloses had D.P.'s ranging from 55 for oat to 185 for rye and were shown to be linear polysaccharides. Autoclaving in distilled water at 120°C. yielded crystalline xylans from barley, rye, and wheat straw hemicelluloses. The basic structure of the hemicellulose was maintained in the crystalline xylans, which gave identical x-ray diffraction patterns and had similar linear structures. The crystallization procedure was found to degrade the hemicellulose, removing D-xylose, L-arabinose, and D-glucuronic acid as components of hydrolytic fragments and leaving a pure xylan one sixth to one third the length of its parent hemicellulose. Depending on uronic acid content, the five hemicelluloses in water gave pH values ranging from 2-5 with consequent variations in resistance to hydrolysis during autoclaving. 6 tables, 3 figures, and 18 references. E.S.

SØRENSEN, HENNING. Enzymatic hydrolysis of xylan. Nature 172, no. 4372: 305-6 (Aug. 15, 1953).

In this preliminary note, the author outlines the effects of enzymes from *Chaetomium globosum* (I), and a *Streptomyces,* a *Micromonospora,* and a *Cellvibrio* species on a xylan isolated from wheat straw. In part the xylan was hydrolyzed to xylose, but a xylobiose and a xylotriose were also isolated, and a group of intermediates (evidently not split by the enzymes) gave rise to sugars other than xylose when subjected to acid hydrolysis. These sugars included arabinose, glucose, and galactose. In one instance an enzyme-resistant, insoluble polysaccharide yielded (on acid hydrolysis) xylose, arabinose, mannose, glucose, galactose, uronic acid, and a trace of rhamnose. It appears that at least in (I) two enzymes are present: one hydrolyzing the xylose chain as far as xylobiose, and the other then hydrolyzing this sugar down to xylose. 1 table and 4 references. L.E.W.

Patent Section

Although the abstracts of the United States and Canadian patents are prepared from the patents themselves, the initial selection of the patents to be abstracted is made from the Patent Gazette *and the* Canadian Patent Office Record *and, therefore, it is possible that the patent section will not contain all patents of potential interest to the industry. In so far as possible, an attempt will be made to indicate patents issued in both countries.*

The patent abstracts are listed under the various headings currently used for the abstracts of periodical articles.

Printed copies of United States patents can be obtained from the Commissioner of Patents, Washington, D.C.; the price is 25 cents per copy. Canadian patents up to and including December, 1948, are available only as manuscripts or photostatic copies, and an estimate of the cost of a patent should be obtained from the Commissioner of Patents, Ottawa, Canada, in advance of the order. With January, 1949, printed copies of Canadian patents are available at 25 cents per copy of less than 50 sheets of printed matter. For patents of 50 sheets or over, the price is $1.00 per copy. Beginning with volume 21, the Canadian patents will be abstracted from the complete specifications.

ANTI-STICKS

DENNETT, FIRTH L. Rendering cellulosic material non-adherent to adhesives. U. S. patent 2,588,367. Filed May 4, 1950. Issued March 11, 1952. 6 claims. Assigned to Dow Corning Corporation. [Cl. 260-13]

Cellulosic materials (such as kraft, sulfite, and rag papers, and different types of board) are rendered nonadherent to materials such as rubber, asphalt, and high-molecular weight organic polymers by treatment with methylhydrogenpolysiloxane (I). The addition of a water-soluble cellulose ether (such as methylcellulose) to (I) in an aqueous emulsion facilitates application and results in a substantial saving of (I). Treated papers are useful for packaging adherent materials and for interleaving between sheets of vulcanized rubber, etc. W.B.W.

MARTIN, JOHN B., and FUNK, CHESTER S. Pressure sensitive adhesive sheet material. U. S. patent 2,648,614. Filed Oct. 27, 1950. Issued Aug. 11, 1953. 11 claims. Assigned to Crown Zellerbach Corporation. [Cl. 117-68.5]

A pressure-sensitive adhesive tape coated on one side with a vulcanized-rubber adhesive is provided with a release coating on the other side of the sheet which prevents adhesion when the tape is wound into a roll. Inexpensive base materials may thus be utilized without danger of delamination of the backing material. The coating comprises a combination of chromium sterato chloride (I) and hydroxyethylcellulose (II) in the proportions of 1-3 parts by weight of (I) for each 5 parts of (II). W.B.W.

BAGASSE

HORTON, PAUL M., and KELLER, ARTHUR G. Methods of separating sugar juice, pith, and fiber from stalks. U. S. patent 2,650,176. Filed Oct. 18, 1949. Issued Aug. 25, 1953. 8 claims.

Assigned to Board of Supervisors of Louisiana State University and Agricultural and Mechanical College. [Cl. 127-43]

Bagasse suitable for papermaking is recovered by this process in which the cane is crushed between a series of rollers to remove the juice, then subjected to a washing with water for removal of additional juices. 1 figure. W.B.W.

BARKERS AND BARKING

GUETTLER, HERBERT W. Short wood chain barker. U. S. patent 2,647,548. Filed Oct. 8, 1949. Issued Aug. 4, 1953. 7 claims. [Cl. 144-208]

A barking device for short logs (six feet or less in length) consists of a stationary vat with an open top, one vertical side, and an upwardly sloping bottom along which a series of chains with log-engaging lugs are spaced. Logs dumped into the vat in random fashion are carried upward to the top of the pile by the lugs, whereupon they tumble downward over the logs in the vat and gradually reach the bottom again. This turbulence within the vat causes attritional removal of the bark from the logs. 5 figures. W.B.W.

BOARD

GRAMELSPACHER, CLARENCE U. Pulp wood product and method of manufacturing. U. S. patent 2,649,034. Filed Sept. 17, 1949. Issued Aug. 18, 1953. 3 claims. [Cl. 92-40]

A wood-product veneer sheet is claimed in which wood chips from wood waste, sawdust, and a minimum of 5% of wood-pulp fiber are mixed with a suitable binder, such as one of the phenol-formaldehyde resins. A mat is formed of the mixture on an endless wire, pressed to the desired thickness, and dried. Preferential alignment of the fibers imparts a grain to the board formed by this method. 8 figures. W.B.W.

PRASE, WERNER. Process for the production of insulating panels, door panels, furniture board or the like. U. S. patent 2,649,135. Filed Oct. 28, 1950. Issued Aug. 18, 1953. 7 claims. [Cl. 154-28]

Sound- and heat-insulating panels with faces of wood veneer, plywood sheets, or compressed sheets containing a filling material of glass wool, slag wool, or rock wool to be used for doors, insulating panels, furniture board, and the like are claimed. Edge strips fastened to the face panels determine the thickness of the panel. Grooves in these edge strips are fitted with key strips that seal the edge of the panel when glued in place. 3 figures. W.B.W.

SURPRENANT, JOSEPH L. Fabricated board. Canadian patent 495,160. Filed Nov. 8, 1950. Issued Aug. 11, 1953. 4 claims.

A lightweight board is formed by a frame of tubular paperboard material similar to mailing tubes; the frame is then covered with paper glued along one edge. The corners are mitered and connected by glued wooden plugs which engage both tubes. The board is useful as a shelf board or as the bolt core for yard goods. 6 figures. W.B.W.

BOARD—SHEET FORMATION

CREWSON, ALLEN M. Air-laying fiber felts. U. S. patent 2,649,394. Filed June 29, 1951. Issued Aug. 18, 1953. 4 claims. Assigned to Wood Conversion Company. [Cl. 154-101]

The formation of a fibrous mat from vegetable fibers (e.g., sulfite or kraft pulp fibers) in a deposition chamber in the presence of a mist of binder material is attendant with festooning difficulties inside the chamber. Triethanolamine oleate introduced into the chamber as a mist in very small quantities reduces the formation of festoons both in rate and size. On a dry fiber basis, the amount of dispersing agent required varies from 0.04 to 0.4%. W.B.W.

BOARD, FIREPROOF

O'BRIEN, HAROLD C., JR. Method of flameproofing cellulosic wallboard and article produced thereby. U. S. patent 2,648,615. Filed May 24, 1949. Issued Aug. 11, 1953. 14 claims. [Cl. 117-71]

Cellulosic wallboard is rendered flameproof by soaking until saturated in a hot aqueous solution of ammonium sulfamate, sodium tetraborate, and a suitable wetting agent (Tergitol FG or 7), followed by drying. An organic sol of pyrobitumen (trade name Roskote resins) is applied as a coating to increase further the resistance of the board to flame propagation. The chemicals are not leached by moisture and the treatment lasts for the life of the board; it will char but not burn when subjected to the flame of a blowtorch. W.B.W.

BOARD SPECIALTIES

BERGSTROM, CARL N. Garment hanger. U. S. patent 2,650,006. Filed Nov. 4, 1948. Issued Aug. 25, 1953. 8 claims. Assigned to Waldorf Paper Products Company. [Cl. 223-88]

A hook is claimed for use in conjunction with garment hangers formed from paperboard, fiber, and similar material. The hanger members are channel shaped with notched ends for engaging the wire hook. 6 figures. W.B.W.

CALDER, CAESAR A. Collar support. U. S. patent 2,648,470. Filed Dec. 23, 1948. Issued Aug. 11, 1953. 18 claims. [Cl. 223-83]

A sheet of cardboard or like material in arcuate form is folded and placed within the neck band of a shirt. The folded flaps are joined together at one point on each side to form an inner and outer flap; the inner flap is provided with serrated edges to engage the shirt collar and hold the support in place. 4 figures. W.B.W.

FAILOR, RALPH J. Carrier for containers. U. S. patent 2,650,128. Filed Sept. 17, 1948. Issued Aug. 25, 1953. 14 claims. [Cl. 294-87.2]

A carrier for bottles and cans is folded from sheet material such as cardboard to resemble an inverted T with the handle formed in the vertical member. Openings in the horizontal sections engage the edge of the crown seal or the bead of the can with gripping flaps to hold the article securely. 6 figures. W.B.W.

GAPSTUR, JOSEPH M. Combined container and display rack. U. S. patent 2,649,957. Filed Nov. 14, 1949. Issued Aug. 25, 1953. 1 claim. [Cl. 206-45.14]

A container and display-stand structure is formed from a one-piece blank of flexible material such as cardboard. Slits and locking tabs provide for closure of the carton, and additional slits make possible a deformation of the front panel to a convex shape for display of articles. Tabs in the face panel provide a means of hanging articles for display. 11 figures. W.B.W.

HILLS, LEANDER H. Method of making sheet material. U. S. patent 2,649,372. Filed Jan. 6, 1950. Issued Aug. 18, 1953. 6 claims. Assigned to The Garlock Packing Company. [Cl. 92-21]

Flexible fibrous sheet material to be used for mid-soles in shoes, damping sheets for sound vibrations, or gasketing material is made by mixing a water-soluble chromate or dichromate with pulp, forming the pulp into a web, and saturating it with animal glue, glycerin, and water. The glue is insolubilized upon contact with the chromate, but the sheet retains its flexibility. A formaldehyde treatment may be added if desired to render the glue more completely insoluble. Fibrous materials such as asbestos or glass may likewise be employed with a suitable binder, as well as granular material such as cork and wood flour. 1 figure. W.B.W.

LEANDER, RUSSELL J. Top display. Canadian patent 495,531. Filed Oct. 3, 1952. Issued Aug. 25, 1953. 5 claims. Assigned to Chicago Show Printing Company.

A two-sided advertising card of waterproofed paper or cardboard for attachment to the top of a gasoline pump is claimed. Paired oval score lines on either side of the center of the card make the base of the card conform to the rounded edges of the casing when the ends of the card are folded together. Attachment is by means of a coil spring and a pair of hooks which engage the louvers on either side of the casing. 3 figures. W.B.W.

MCFALL, WILLIAM W. Shirt packaging device. U. S. patent 2,649,228. Filed April 19, 1951. Issued Aug. 18, 1953. 4 claims. [Cl. 223-71]

A two-part, shirt-packaging device comprises a paperboard panel, a portion of which folds over the collar and forms a protecting cover. The reinforcing strip fits inside the collar of the shirt and interlocks with the folded-over portion of the panel. A strut formed in the overlapping portion of the panel supports the collar and prevents crushing. 7 figures. W.B.W.

OLSON, DOUGLAS J. Holder for paper plates and the like. U. S. patent 2,647,678. Filed May 5, 1950. Issued Aug. 4, 1953. 1 claim. [Cl. 229-1.5]

This gripping attachment for paper plates at picnics, etc. consists of a circular disk scored through the center, one half being attached to the bottom of the plate. The unattached half may be bent downward at the score line at right angles to the plate and held between the knees of the user, so that tilting and slipping of the plate is avoided. 3 figures. W.B.W.

SCHILLING, PAUL A., MAIRS, THOMAS G., and BAIRD, JOHN B. Cellular case. U. S. patent 2,647,679. Filed Nov. 28, 1949. Issued Aug. 4, 1953. 4 claims. Assigned to Waldorf Paper Products Company. [Cl. 229-15]

A cellular case for holding 24 bottles of soft drinks has side, bottom, and partition walls of paperboard. Partition members that are slotted from the top down are reinforced by the inclusion of a wire between the folded members of the partitions near the top of the dividers. The case is sufficiently strong for repeated use. 7 figures. W.B.W.

SUTTER, GLADYS. Garment hanger. U. S. patent 2,649,229. Filed Jan. 2, 1951. Issued Aug. 18, 1953. 12 claims. [Cl. 223-98]

The device, formed from stiff paper or cardboard, is to be used in conjunction with a wood- or wire-garment hanger. A rounded shoulder portion with an upstanding section to define the collar is made by fastening two blanks together by staples or glue so that the sloping shoulders of the garment are properly supported. 5 figures. W.B.W.

WHEELER, GORDON D., and REILLY, JAMES H. Refrigerated carton. U. S. patent 2,648,954. Filed Sept. 7, 1950. Issued Aug. 18, 1953. 5 claims. [Cl. 62-91.5]

A partition for separation of cans in a carton is cut vertically at intervals to form wings folded to either side of the partition. Solidified carbon dioxide or containers for holding same are supported in the partition and between the wings so that the cooled air may circulate between the cans. 4 figures. W.B.W.

YOUNGBLOOD, KNOWLES. Shirt board. U. S. patent 2,648,469. Filed April 10, 1950. Issued Aug. 11, 1953. 1 claim. [Cl. 223-71]

A shirt board of cardboard or the like, substantially rectangular in shape, is claimed with a slotted section for engagement of the collar and a serrated edge for engagement of the folded shirt to prevent slippage during or subsequent to folding and fastening. 6 figures. W.B.W.

CARBON, ACTIVATED

HASSLER, JOHN W., and MCMINN, WILLIAM E. Manufacture of active carbon. U. S. patent 2,632,738. Filed Oct. 12, 1949. Issued March 24, 1953. 7 claims. Assigned to West Virginia Pulp and Paper Company. [Cl. 252-421]

A dried comminuted carbonaceous material (such as bark or wood sawdust) is added to concentrated black liquor before burning. The black ash is leached with water and the crude carbon formed activated by selective oxidation with steam at 800 to 950°C., followed by air at from 400 to 600°. Black liquor thus enriched with carbonaceous material gives an increased yield of activated carbon. W.B.W.

DE-INKING

REID, CHARLES S. Apparatus for deinking and defibering waste-paper. U. S. patent 2,649,371. Filed May 3, 1949. Issued Aug. 18, 1953. 4 claims. [Cl. 92-1.5]

A defibering and deinking apparatus comprises a horizontal cylinder through which extends a rotating hollow shaft. Holes are provided in the shaft to allow the introduction of liquids into the drum; arms projecting from the shaft mix and defiber the waste paper fed into the drum through a hopper. Liquids and ink solids are removed continuously through the wire-mesh bottom of the drum. An outer shell enables the mixer to operate at low consistencies if desired. 6 figures. W.B.W.

DIELECTRICS

DAVEY, EDWARD L. Gas-filled electric cable with paper and polystyrene insulation. U. S. patent 2,650,261. Filed Sept. 27, 1950. Issued Aug. 25, 1953. 2 claims. Assigned to W. T. Glover & Company Limited. [Cl. 174-25]

A super-tension cable embodying a lapped dielectric containing strips of

unoriented polystyrene and preimpregnated paper is claimed. This is similar to Canadian patent 481,367 (Feb. 26, 1952); *cf.* B.I.P.C. 22: 628. 2 figures.
W.B.W.

DISPENSING CONTAINERS

LANGFORD, CARY J. Display carton. U. S. patent 2,648,427. Filed Nov. 4, 1949. Issued Aug. 11, 1953. 1 claim. Assigned to Waldorf Paper Products Company. [Cl. 206-45.31]

A tray-type carton for packaging and display of fruits and vegetables is overwrapped with cellophane or other transparent film material. The bottom of the tray is not covered by the overwrap and is provided with score marks which form a hinged opening for removal of the contents. 3 figures.
W.B.W.

PAOLI, STEPHEN A. Seasoning dispenser. U. S. patent 2,647,681. Filed April 20, 1949. Issued Aug. 4, 1953. 4 claims. [Cl. 229-56]

A capsule holding salt or other condiments is attached to the interior of a bag containing potato chips and like foods. The desired amount of condiment is released by deformation of the capsule through the bag wall as indicated on the exterior of the bag, thus seasoning the contents to suit the individual. 7 figures. W.B.W.

SMITH, WILLIAM C. Dispenser. U. S. patent 2,648,429. Filed Dec. 29, 1949. Issued Aug. 11, 1953. 4 claims. Assigned to Chicago Carton Company. [Cl. 206-56]

A dispensing container for ice-cream cones is fitted with a double-walled bottom wherein vertically aligned openings under each stack of cones are formed by diagonal slits leaving the resilient tabs hinged at the perimeter. When a cone is withdrawn from the bottom of the carton, tabs in the upper opening engage and support the stack of cones while the bottom one is still being withdrawn through the lower opening. 5 figures. W.B.W.

DYES AND DYEING

KENDALL, JOHN D., and FRY, DOUGLAS J. Optically bleached fibrous material. U. S. patent 2,649,385. Filed Oct. 25, 1951. Issued Aug. 18, 1953. 13 claims. Assigned to Ilford Limited. [Cl. 117-33.5]

An optical brightening agent for textiles containing 3,3'-dimethyl-5-methoxy-5'-methyloxacyanine p-toluene sulfonate or similar compounds is claimed. W.B.W.

EVAPORATION AND EVAPORATORS

GADRET, RENÉ H. Process for the treatment of waste liquors derived from cellulose manufacture. Canadian patent 495,425. Filed Sept. 30, 1948. Issued Aug. 18, 1953. 5 claims. Assigned to Papeteries de Gascogne (Société Anonyme).

By the atomization of black liquor under pressure, a very fine suspension is formed in space in an unobstructed chamber where the temperature is 280-300°C.; a quantity of air which is insufficient to ensure complete combustion of the liquor components is introduced into the chamber in the vicinity of the spray jets. The almost instantaneous evaporation of the water in the minute particles of black liquor in the region of the air inlet is followed by a partial combustion which serves to maintain the operating temperature; a gasifica-

tion of the unburned organic components also takes place. The inorganic components eventually separate and collect on the bottom of the chamber in an unmelted condition. Exit gases may be completely burned in a separate heat-generating chamber. This corresponds to U. S. patent 2,535,730 (Dec. 26, 1950); *cf.* B.I.P.C. 21: 510. 3 figures. W.B.W.

FIBER—TESTING

PUSTER, LOUIS M. Fiber length distribution measuring instrument. U. S. patent 2,648,251. Filed July 2, 1947. Issued Aug. 11, 1953. 6 claims. Assigned to The University of Tennessee Research Corporation. [Cl. 88-14]

An instrument for measuring fiber length and distribution involves an optical system wherein a single light source is employed to illuminate a known sample and the sample to be tested. Through an appropriate lens system, light is directed through the sample and into a light-responsive device such as a photocell. A galvanometer is connected between the known and unknown circuits and an adjustable aperture is provided for balancing the circuits. Variations in light intensity through the sample are transmitted to a pen for tracing a fiber-length-distribution curve. 7 figures. W.B.W.

FOLDING BOXES

ELLSWORTH, RANSOM C. Sealed container. U. S. patent 2,649,239. Filed May 8, 1950. Issued Aug. 18, 1953. 1 claim. Assigned to The Ohio Boxboard Company. [Cl. 229-33]

A paperboard container with a hinged cover member having a tuck-in flap is sealed by spot gluing of the cover member. The seals are easily broken for opening the container; the reclosed cover is held by a tongue in the front wall after the adhesive seals have been broken. 5 figures. W.B.W.

FRANKENSTEIN, WILLIAM P. Carton. U. S. patent 2,650,015. Filed Jan. 2, 1948. Issued Aug. 25, 1953. 9 claims. [Cl. 229-31]

The carton is set up from a one-piece blank and contains a base portion and a cover member hinged to it. The blank may be partially assembled and shipped in a flat condition for easy erection by the user for the display of goods. 40 figures. W.B.W.

GILBERT, CLYDE L. Blank for box production. U. S. patent 2,649,240. Filed Oct. 13, 1947. Issued Aug. 18, 1953. 2 claims. [Cl. 229-39]

A box blank is claimed for forming a shallow box from paperboard wherein flaps with a score line hold the box bottom during the gluing operation and may be severed if the "cocking" of the completed box is caused by misalignment. Flaps forming a portion of the bottom may be engaged in slots in the bottom edge to hold the box in tilted position for display purposes. 4 figures. W.B.W.

MACHINERY—BOARD MACHINES

CROSTON, EDWARD L., and HARBORD, HORACE R. Fibrous material extrusion apparatus. U. S. patent 2,648,262. Filed Sept. 3, 1948. Issued Aug. 11, 1953. 9 claims. Assigned to American Manufacturing Company, Inc. [Cl. 92-61]

A continuous-process hardboard machine comprises a tapered extrusion

chamber through which the wet fibrous material (wood fiber, bagasse, or the like) is forced by a reciprocating plunger. The bottom wall of the extrusion chamber carries an endless belt screen upon which the mat is formed; this screen provides a means for the escape of water and steam during processing. At the end of the extrusion chamber the mat passes between heated platens where it is dried and the binder (if incorporated) cured. Upon leaving the heated platens, the board is ready for cutting into desired lengths. 8 figures. W.B.W.

MACHINERY—CARTON-FEEDING MECHANISM

SHIELDS, ALBERT F. Blank feeding mechanism. U. S. patent 2,650,093. Filed March 3, 1949. Issued Aug. 25, 1953. 3 claims. Assigned to S&S Corrugated Paper Machinery Co., Inc. [Cl. 271-44]

The box-blank-engaging finger in this mechanism is mounted on a chain which operates between crank arms. Gradual starting and stopping of the feeding mechanism is accomplished by a spring connection of the chain with the crank arm at either end. The blank may be moved any desired distance with this device. 1 figure. W.B.W.

MACHINERY—CONVERTING MACHINERY

BARTELT, HAROLD L. Packaging machine. U. S. patent 2,649,673. Filed April 23, 1952. Issued Aug. 25, 1953. 5 claims. Assigned 45% to Donald E. Bartelt. [Cl. 53-86]

A machine is claimed for making bags from a double row of flexible heat-sealable material, introducing the required amount of material in the lower portion of the bag, forming a cross seal to close the lower bag, and then introducing material into the upper bag and forming the seal. The upper and lower bags are severed from the strip and then from each other. 16 figures. W.B.W.

BARTELT, HAROLD L. Packaging machine. U. S. patent 2,649,674. Filed June 13, 1949. Issued Aug. 25, 1953. 16 claims. Assigned 45% to Donald E. Bartelt. [Cl. 53-89]

Bags are formed by folding a strip of heat-sealable paper into two vertical side strips, then sealing these strips together at spaced intervals to form a series of connected bags. Vacuum cups engage the upper edge of the bag wall at the filling station to ensure opening. The machine features easy adjustability for changing the bag size. 24 figures. W.B.W.

GOODWIN, GEORGE I., and KLEE, HOWARD H. Method and machine for producing a continuous honeycomb structure. U. S. patent 2,648,371. Filed March 27, 1948. Issued Aug. 11, 1953. 26 claims. Klee's interest assigned to Goodwin. [Cl. 154-1.8]

A method and machine for making a cellular structure to form the core for building panels, doors, etc. from a web of paper or other flexible sheet material is claimed. Narrow strips are fed into the machine, adhesively secured together at staggered points on either side of each strip, whereupon the material is expanded to the desired width. The structure is made rigid by application of a thermosetting resin or other material and passed through a heating chamber to cure the resin. The honeycomb structure is then cut to the desired length and incorporated in the panel or other structure. 31 figures. W.B.W.

OVERLAND, LEO D., and LEVINE, JACK W. Automatic means for making special cardboard containers. Canadian patent 494,506. Filed Feb. 6, 1950. Issued July 21, 1953. 1 claim.

A roll press for forming a special channel in the side of the carton for ice-cream sandwiches, etc. consists of two pairs of matched rolls which first press a rounded channel into the paperboard, then form the channel with beveled shoulders. The rolls are heated and form a bend greater than that desired in the final channel. This is identical with U. S. patent 2,643,591 (June 30, 1953); *cf.* B.I.P.C. 23: 937. 25 figures. W.B.W.

RICHENS, ARTHUR W. Method of making bags. U. S. patent 2,648,263. Filed Oct. 2, 1948. Issued Aug. 11, 1953. 4 claims. [Cl. 93-35]

A method and machine are claimed for making square-bottomed bags from bag tubing coated on the inner surface with material of suitable moisture-resisting and heat-sealing properties. Thermoplastic adhesive is applied and the bottom sealed against seepage of liquids or pulverulent materials. 27 figures. W.B.W.

ROHDIN, JAMES O. Packeting machines. Canadian patent 495,031. Filed Sept. 6, 1950. Issued Aug. 4, 1953. 2 claims. Assigned to Esselte forpackning ab.

The patent covers an apparatus for erecting cartons covered by the U. S. patent 2,427,858 (Sept. 23, 1947) to S. B. Hogdal. This is the same as U. S. patent 2,619,882 (Dec. 2, 1952); *cf.* B.I.P.C. 23: 372. 9 figures. W.B.W.

MACHINERY—CORRUGATING MACHINE

BRUKER, HOBART W. Corrugating machine guide construction. Canadian patent 495,286. Filed March 24, 1950. Issued Aug. 11, 1953. 8 claims. Assigned to George W. Swift, Jr., Incorporated.

The corrugating roll of the device claimed contains peripheral grooves within which stripper blades ride. These blades ensure that the corrugated material is transferred from the first to the second roll. A slidable mounting is provided for the blades to compensate for longitudinal shifting of the corrugating roll. 4 figures. W.B.W.

MACHINERY—CUTTERS

ADRIAN, JOSEPH. Hydraulically operated paper cutter. U. S. patent 2,649,154. Filed Aug. 26, 1950. Issued Aug. 18, 1953. 8 claims. Assigned to Super Speed Printing Machinery, Inc. [Cl. 164-56]

This hydraulically operated paper cutter contains a latch element in the knife-control mechanism to insure that the knife is raised to the upper limit of travel before stopping. The operator is prevented from raising the knife a fraction of its normal travel with the attendant danger to the operator. 8 figures. W.B.W.

FRANKEL, SYDNEY. Back gauge for paper cutter-drive disconnect for manual operation. U. S. patent 2,649,912. Filed March 25, 1950. Issued Aug. 25, 1953. 2 claims. Assigned to E. P. Lawson Co., Inc. [Cl. 164-59]

A means is provided whereby the back gage is easily disconnected from the automatic drive mechanism and made responsive to manual operation to permit the cutter to perform a series of cuts on a paper stack. 8 figures. W.B.W.

PIPER, RONALD N. Apparatus for cutting lengths from a web of paper, cardboard or similar material. Canadian patent 495,094. Filed July 26, 1950. Issued Aug. 4, 1953. 5 claims. Assigned to Powers-Samas Accounting Machines Limited.

Two rotatable knives are mounted in drum-shaped knife holders on either side of the web of paper, cardboard, or similar material. The peripheral speed of the holders is adjusted so that it is equal to or slightly less than the velocity of the web. This is identical with U. S. patent 2,640,539 (June 2, 1953); *cf.* B.I.P.C. 23: 846. 10 figures. W.B.W.

SEYBOLD, FREDERICK W. Drive mechanism for guillotine knife bars. U. S. patent 2,649,910. Filed April 5, 1950. Issued Aug. 25, 1953. 5 claims. Assigned to E. P. Lawson Co., Inc. [Cl. 164-54]

The cutter knife in this mechanism is driven by a hydraulic cylinder with the clamping device which holds the paper during the cutting operation likewise hydraulically controlled. A connection between the two hydraulic systems ensures that pressure is applied to the stack of sheets during cutting. 14 figures. W.B.W.

SPILLER, WILLIAM R. Sheet handling mechanism for cutting machines. U. S. patent 2,649,155. Filed Feb. 24, 1947. Issued Aug. 18, 1953. 37 claims. Assigned to Harris-Seybold Company. [Cl. 164-59]

A control means for the work-moving gage of a sheet-cutter table contains a combination electrical-hydraulic system for moving the gage through any desired sequence of operations. The same control means is applicable to the gage on either side or in front of the work. A turret head contains a number of control rods to control forward and backward movement of the back gage, either automatically or in response to manual actuation. 42 figures. W.B.W.

TEALL, OLIVER E. Cutting machines. Canadian patent 495,252. Filed Feb. 10, 1951. Issued Aug. 11, 1953. 11 claims. Assigned to National Cellulose of Canada Limited.

A conveyor adapted to feed a multiple-layer stack of tissue, toweling, etc. continuously, co-operates with circular cutting knives which move with the conveyor. This corresponds to U. S. patent 2,627,922 (Feb. 10, 1953); *cf.* B.I.P.C. 23: 522. 11 figures. W.B.W.

MACHINERY—FOLDING MACHINE

ANDRÉ, NOBLE. Flap folding means. U. S. patent 2,647,447. Filed Feb. 28, 1948. Issued Aug. 4, 1953. 3 claims. [Cl. 93-49]

A flap-folding means is claimed wherein the folding-box blank is advanced in the machine with the bottom flaps forward, while spring-wire fingers engage the flaps to fold them rearward over the side panels. 10 figures. W.B.W.

MACHINERY—PACKAGING MACHINERY

CLOUD, WILLIAM S. Apparatus for making stiffened wrappers. U. S. patent 2,649,035. Filed April 5, 1951. Issued Aug. 18, 1953. 15 claims. [Cl. 93-1]

A machine is claimed for insertion of a stiffening strip inside of a tubular candy wrapper and the attachment of a stiffened backing to the outside of the tube. The tube is cut into lengths for packing the individual candy bars after insertion of the stiffener and application of the backing strip. 8 figures. W.B.W.

DALTON, THOMAS B. Wrapping machine. U. S. patent 2,648,180. Filed May 27, 1948. Issued Aug. 11, 1953. 5 claims. Assigned to Valley Research Corporation. [Cl. 53-32]

A machine for wrapping butter, frozen foods, etc. contains a large package carrying wheel, the perimeter of which is fitted with U-shaped pockets for holding the package during the wrapping cycle. Precut sheets of wrapping material having a heat-sealable wax coating are folded about the product, and heating elements produce a controlled seal at the overlapped edges. 18 figures. W.B.W.

GURR, EDWARD G. Packing machine. Canadian patent 495,495. Filed June 19, 1950. Issued Aug. 25, 1953. 1 claim.

A machine for introducing a measured amount of a nonfreeflowing material (such as ready-mix pie or cake flour) into a paper bag inside a carton is claimed. Material is removed from the bottom of the hopper by a screw conveyor connected to a time-switch device to control the quantity delivered to the spout above the turntable. Packages to be filled are carried on a turntable which positions the package under the spout. 10 figures. W.B.W.

KERR, CHARLES E., and ELSHEIMER, ROSCOE. Apparatus for handling cartons. U. S. patent 2,649,676. Filed Dec. 19, 1947. Issued Aug. 25, 1953. 17 claims. Assigned to Food Machinery and Chemical Corporation. [Cl. 53-138]

The machine claimed receives cartons from the filling machine with the flange of the hinged cover collapsed upon the under side of the cover. Picker fingers erect the flange, then close the cover with the flange in the erected position. 24 figures. W.B.W.

ROHDIN, JAMES O. Packeting machines. Canadian patent 495,032. Filed Sept. 6, 1950. Issued Aug. 4, 1953. 6 claims. Assigned to Esselte forpackning ab.

Cartons in the flat or collapsed condition are stored in the magazine of the machine and fed into recesses in a circular carrier. The carton is forced into the open position in the recess, and a gripper mechanism engages the flaps to insure complete opening before the carton reaches the filling station. 6 figures. W.B.W.

MACHINERY—PULPERS

CHAPLIN, MERLE P. Fiber disintegrator and separator. U. S. patent 2,648,261. Filed June 30, 1950. Issued Aug. 11, 1953. 18 claims. Assigned to Chaplin Corporation. [Cl. 92-23]

A pulper for defibering material in sheet, roll, or bale form is especially

adapted for the reclamation of waste paper. A vertically mounted screw circulates the slurry in a tank, at the same time acting on the fibrous mass to aid disintegration. A rotating plate coaxially mounted with the screw at the bottom of the tank is fitted with knobbed projections which act on the undefibered material and reduce the size of the particles. Defibered material is continuously removed from the vessel through screens installed in the tank wall; a rubber diaphragm mounted outside the wall causes a vibrating screening action. Water jets may be employed in conjunction with the screens. 10 figures. W.B.W.

MACHINERY—REFINERS

ARPIN, EDMUND P., JR. Rotary refiner. U. S. patent 2,649,718. Filed Nov. 7, 1952. Issued Aug. 25, 1953. 3 claims. [Cl. 92-26]

This is similar to U. S. patent 2,649,717 (Aug. 25, 1953); *cf.* abstract below. 3 figures. W.B.W.

ARPIN, EDMUND P., JR., and FRYE, RAYMOND P. Rotary refiner. U. S. patent 2,649,717. Filed Aug. 28, 1951. Issued Aug. 25, 1953. 4 claims. Frye's interest assigned to Arpin. [Cl. 92-26]

This rotary refiner comprises a stationary shell with a cylindrical abrasive liner of stone, metal, or ceramic material. A hollow shaft on which the refiner elements are mounted extends through the refiner and includes means within the shaft for the control of the refiner elements. These elements are mounted around the shaft in groups of four so that the rotation of the shaft forces the individual elements against the abrasive liner. Helical grooves are provided in the face of the liner and the refiner elements to provide for circulation of stock; the assembly is claimed to operate satisfactorily under low-consistency stock conditions. 4 figures. W.B.W.

MACHINERY—SCREENS

NORTH, JAMES P. Liquid clarifiers. Canadian patent 495,221. Filed Nov. 26, 1947. Issued Aug. 11, 1953. 2 claims. Assigned to Green Bay Foundry and Machine Company.

The machine comprises a wire-covered cylinder (one end of which is closed) operated within a vat. Material to be clarified is introduced at the open end; solids are retained on the screen and, as it revolves, carried out of the vat by vanes mounted inside the cylinder. As these vanes approach the upper quadrant, shower pipes mounted outside the drum wash the accumulated solids from the screen into a trough, from which they are removed by a screw conveyor. The clarified effluent is withdrawn from the bottom of the vat. 6 figures. W.B.W.

MACHINERY—SHEET-FEEDING MECHANISM

POPE, DOUGLAS H. Sheet feeding apparatus. Canadian patent 495,154. Filed Jan. 25, 1951. Issued Aug. 11, 1953. 3 claims.

A perforated suction roller in this sheet-feeding device is connected to a vacuum source and journaled on rocker arms which are pivotally connected with another suitable mechanism to be operated in synchronization. When the rocker arm raises the roller with the adhering sheet, the gear on the suction roller engages a continuously rotating drive gear. In this manner the suction roller is positively rotated and in timed relationship with the associated machinery. 5 figures. W.B.W.

MACHINERY—SLITTERS AND WINDERS

CARTER, THOMAS N. Rewinding machine. U. S. patent 2,650,039. Filed Nov. 28, 1950. Issued Aug. 25, 1953. 4 claims. Assigned to Cameron Machine Company. [Cl. 242-65]

The peripheral speed of the rewind roll is maintained constant while the roll diameter increases. A variable-speed driving means is controlled by the angular movement of the arm supporting the rewind roll, the speed of the rewind drive varying inversely with the diameter of the roll. 20 figures. W.B.W.

KIEVIT, JASPER. Automatic web rewinding machine. U. S. patent 2,650,038. Filed March 29, 1947. Issued Aug. 25, 1953. 4 claims. Assigned to The Crystal Waxing Company. [Cl. 242-56]

A machine for rewinding measured lengths of web material such as waxed paper for insertion into dispensing cartons for household use is claimed. Two rotatable mandrels on a continuously rotating turret are alternately wound with paper during one half of the turret rotation, and the filled roll is removed from the mandrel during the other half of the turret rotation. A knife mounted on a lever arm severs the web as the filled mandrel moves into the unloading position. 12 figures. W.B.W.

MARCALUS, NICHOLAS. Production of short paper rolls from long paper rolls. U. S. patent 2,647,576. Filed Feb. 16, 1949. Issued Aug. 4, 1953. 15 claims. [Cl. 164-35]

Small rolls of paper, such as toilet paper, are produced by first rewinding the paper to the proper diameter onto a core the length of the large machine roll. Rolls of the desired length are then cut from the long roll by a band knife that is continuously sharpened by abrasive wheels. The roll holder is pivoted so that the long roll is carried into the band knife. 10 figures. W.B.W.

ROEN, GUNNAR. Paper winding machine. Canadian patent 495,156. Filed March 20, 1947. Issued Aug. 11, 1953. 12 claims.

An automatic rewinder for small rolls of paper, such as counter rolls, toilet paper, and cash-register strips is claimed. This is the same as U. S. patent 2,599,942 (June 10, 1952); *cf.* B.I.P.C. *22*: 878. 5 figures. W.B.W.

MACHINERY—SORTING MACHINE

JOHNSON, CLAUDE W. Apparatus for aligning and sorting sheets of paper, etc., and parts therefor. U. S. patent 2,650,109. Filed Dec. 9, 1949. Issued Aug. 25, 1953. 30 claims. [Cl. 282-1]

A device used to align and sort sheet material, such as employed in a punched-card system is claimed. The sheets are jogged into alignment in a V-shaped trough, which is caused to vibrate rapidly; the sorting is accomplished by suspending the cards vertically on pins mounted on the jogging frame so that the vibration causes the slotted cards to fall from the pins. 26 figures. W.B.W.

MACHINERY—STRIPPING MACHINE

KANE, GIDEON. Waste stripping mechanism for carton blank forming apparatus. U. S. patent 2,647,446. Filed Feb. 28, 1951. Issued Aug. 4, 1953. 2 claims. [Cl. 93-36]

Waste from cut carton blanks is stripped by impaling the waste on pins, then removing the waste board from the pins by means of slotted fingers. The carton blanks from the blanking press are fed between a wooden roll carrying the pins and a soft rubber roll which presses the waste portions of the blank into engagement with the pins. 8 figures. W.B.W.

MACHINERY—SUCTION ROLLS

HORNBOSTEL, LLOYD. Suction roll seal assembly. U. S. patent 2,649,719. Filed April 27, 1949. Issued Aug. 25, 1953. 7 claims. Assigned to Beloit Iron Works. [Cl. 92-53]

This sealing device for suction rolls comprises a seal strip (I) mounted in a slot and capable of movement in the slot to conform to the interior of the suction roll. Rubber tubes in channels along either side of (I) are compressed into oval cross sections and provide edge seals for (I). The edge of (I) is held in sealing engagement with the inside of the roll by an inflated tube which lies in the bottom of the slot. 4 figures. W.B.W.

MACHINERY—WEB-FEEDING MECHANISM

DALTON, THOMAS B. Wrapper feeding mechanism. U. S. patent 2,648,183. Filed Oct. 17, 1949. Issued Aug. 11, 1953. 10 claims. Assigned to Valley Research Corporation. [Cl. 53-155]

A light-sensitive element such as a phototube is registered on the index marks of the wrapping-paper web thereby ensuring the cutting of the material into predetermined lengths. An electromagnetic clutch and brake are provided for starting and stopping of the wrapper feed rollers. This device is particularly suited for use in conjunction with a wrapping machine described in U. S. patent 2,648,180 (Aug. 11, 1953); *cf.* B.I.P.C. 24: 159. 22 figures. W.B.W.

MATERIALS HANDLING

FARLEY, PHILIP S. Apparatus for feeding fibrous material. U. S. patent 2,650,002. Filed July 27, 1948. Issued Aug. 25, 1953. 1 claim. Assigned to Noble Co. [Cl. 222-238]

An apparatus for feeding fibrous material, particularly scrap asbestos, consists of an agitator mounted directly above a screw conveyor in the storage bin. Rotation of the agitator causes the scrap to be dislodged and fall into the conveyor for removal from the bin. 3 figures. W.B.W.

VOGT, CLARENCE W. Bag assembly. U. S. patent 2,647,680. Filed July 13, 1948. Issued Aug. 4, 1953. 9 claims. [Cl. 229-53]

A method of handling bags is described wherein the bags are connected with one or more flexible strips of paper to assist in the advancement of the bags and in the opening, closing, and sealing operations. The bags may be attached to either side of a strip bent to form an inverted V and resting on a horizontal support. The bags are connected to the strip by a heat-activated adhesive and, after the filled bags have been sealed, the temperature of the sealing area is raised to free the bag from the strip. 7 figures. W.B.W.

MOLDED PULP ARTICLES

STEVENS, CLIFFORD E. Apparatus for the automatic forming of cast fibrous pulp cone blanks for cone speaker diaphragms. U. S.

patent 2,645,165. Filed Sept. 14, 1951. Issued July 14, 1953. 5 claims. Assigned to Stevens Products Inc. [Cl. 92-56]

Molded-fiber speaker cones are formed on a conical screen by first immersing the screen into the pulp suspension while a vacuum is applied to the interior of the screen, and then removing the screen from the slurry while air pressure is applied inside the screen to aid in the removal of the formed blank. 7 figures. W.B.W.

PACKAGING

JAMESON, WILLIAM. Container package structure. U. S. patent 2,649,197. Filed June 23, 1951. Issued Aug. 18, 1953. 3 claims. [Cl. 206-47]

Water-soluble material placed in the bottom of a disposable container such as a paper cup will provide a complete drink on dilution with water. The conical cups are nested together and a frangible seal of wax is provided between the rim of each cup and the body of the nested cup. An airtight seal is thus provided for all containers below the topmost where a special seal or cover must be provided. 3 figures. W.B.W.

PAPER—COATED

GRIESHEIMER, RUDOLPH N., and HYDELL, ROBERT C. Apparatus and process for coating paper. U. S. patent 2,647,842. Filed Jan. 31, 1948. Issued Aug. 4, 1953. 14 claims. Assigned to The Mead Corporation. [Cl. 117-64]

The coated side of the sheet is brought into contact with a refrigerated smoothing roll at temperatures ranging from −20 to −40°C., whereby the normally adhesive properties of the coating for the roll are nullified and the smoothed surface of the coating retains the surface-smoothness characteristics imparted thereto after separation from the roll. The unsupported web is then passed over air jets to complete the drying process, whereupon the paper may be supercalendered to remove the strain lines which develop when the frozen coating thaws. The equipment is particularly adapted for use with coatings of a high-solids content for the production of high-grade magazine and book papers. 6 figures. W.B.W.

KENNEWAY, HAROLD J., JR. Adhesively coated sheet materials. Canadian patent 495,242. Filed July 27, 1950. Issued Aug. 11, 1953. 5 claims. Assigned to McLaurin-Jones Co.

A heat-sealable composition is claimed wherein the heat-activated material is compounded to retain its adhesive characteristics for a substantial period of time subsequent to activation (delayed action). This makes it possible to apply the tape or label at a place, time, and temperature that is most convenient to the user rather than immediately upon contact with the heating element of the heat-sealing machine. The thermoplastic resin (a great variety of resins may be used) and the plasticizer (diphenyl phthalate or others) for the resin are applied to the tape or label in successive coatings so that they blend together upon heating. Depending upon the materials used, the duration of utilizable tack may vary from 60 seconds to 48 hours. W.B.W.

SNOWMAN, PAUL A., JR. Coated paper and method for making same. U. S. patent 2,649,386. Filed Feb. 21, 1948. Issued Aug. 18, 1953. 5 claims. Assigned to North American Paper Process Company. [Cl. 117-38]

A method for coating paper with a discontinuous coating of substantially uniform pattern is claimed wherein a series of separate minute mounds are deposited on the web. The web is passed between calender rolls for leveling the upper surface of the mounds, while at the same time imbedding the mounds into the web. The size and spacing of the individual mounds of coating is such that unaided visual examination does not reveal the discontinuous nature of the coating. A lightweight coating may thus be applied to lower-grade papers with a considerable saving of coating materials. 10 figures. W.B.W.

PAPER SIZING

HORSEY, ELEANOR F., and THOMPSON, WILLIAM D. Butadiene-styrene sized paper and method. U. S. patent 2,650,163. Filed May 21, 1947. Issued Aug. 25, 1953. 11 claims. Assigned to Hercules Powder Company. [Cl. 92-3]

Wet strength and resistance to penetration of water-base inks are greatly improved by the addition of a butadiene-styrene copolymer latex containing about 25% butadiene and 75% styrene. The copolymer is applied as a beater additive with alum and in amounts varying from 1 to 8% based on the weight of the oven-dry fiber. 2 figures. W.B.W.

PAPER SPECIALTIES

BATTISTA, ORLANDO A. Method of making a wound package and after-treating the same. U. S. patent 2,647,816. Filed July 10, 1948. Issued Aug. 4, 1953. 4 claims. Assigned to American Viscose Corporation. [Cl. 8-155.2]

A paper wrapper for protection of a cake of rayon fiber during processing consists of a liquid-permeable paper base with cellulose ester fibers bonded to the surface, either by solvent or by heat. The paper with the regenerated cellulose fibers (20 to 50% by weight) is formed into a tube and placed over the cake. As the cake shrinks during subsequent processing, the fibers bonded to the paper likewise shrink and insure a snug fit of the wrapper. 5 figures. W.B.W.

BATTISTA, ORLANDO A., and WHYTLAW, GRAEME G. Shrinkable wrappers for annular thread packages. Canadian patent 495,524. Filed Dec. 29, 1950. Issued Aug. 25, 1953. 6 claims. Assigned to American Viscose Corporation.

This is very similar to U. S. patent 2,647,816 (Aug. 4, 1953); *cf.* preceding abstract. W.B.W.

HANSON, NORMAN D. Filter medium and method of making the same. U. S. patent 2,648,617. Filed Sept. 2, 1948. Issued Aug. 11, 1953. 8 claims. Assigned to Union Carbide and Carbon Corporation. [Cl. 117-155]

Impregnation of filter paper with an ester resulting from the condensation of a polyhydric alcohol with a dienoic monoacid results in a paper that is porous, flexible, and resistant to weakening by water. In an example, a porous kraft paper 8 mils thick was treated with the ester to retain 30% after removal of the solvent, and the impregnated web was baked for 30 minutes at 120°C. The treated web showed no weakening after soaking in warm water, and filtration of sludge from oil was satisfactory at the end of the 24-hour soaking period. W.B.W.

HERMANSON, WILLIAM A., and HERMANSON, GERALD I. Disposable diaper. U. S. patent 2,649,859. Filed Feb. 10, 1951. Issued Aug. 25, 1953. 10 claims. [Cl. 128-287]

The top sheet of a disposable diaper is made from a paper treated to have wet strength and yet be both absorbent and permeable. Long vegetable fibers such as abaca and combinations of the above with synthetic fibers and wood pulp may be used. An absorbent layer composed of creped cellulose sheets is backed with a plastic film of polyethylene or other suitable material which is sealed by heat or other means to the top sheet. To dispose of the diaper, the adhesive bond is broken between the top sheet and the backing film and the latter disposed of separately. 4 figures. W.B.W.

HOLE, EDWARD S. Sticking together resin-impregnated cellulosic sheets. U. S. patent 2,648,620. Filed Jan. 5, 1951. Issued Aug. 11, 1953. 10 claims. [Cl. 154-138]

A method for uniting several sheets of blotting paper impregnated with a phenol-formaldehyde resin to form printing plates and matrices of the required thickness is claimed. The bonding agent employed consists of a mixture of aluminum hydroxide, chalk powder, magnesium chromate, and water, and is applied to the dry surfaces; the sheets are then pressed together and dried slowly. The composite laminated pack is ready for molding and setting under heat and pressure. Zinc oxide may be used in place of aluminum hydroxide but is more difficult to apply and may cause the composite sheet to bend or curl. W.B.W.

LE BOLT, JOHN M. Disposable baby diaper. U. S. patent 2,649,858. Filed Jan. 9, 1951. Issued Aug. 25, 1953. 5 claims. Assigned to The Cromwell Paper Company. [Cl. 128-284]

A disposable diaper comprises an inner ply of soft porous paper, an absorbent cellulose layer, and a backing sheet of polyethylene or wet-strength paper. An arcuate-shaped indentation is formed in each side to make the diaper form-fitting, and a pressure-seal adhesive is provided on the upper band for fastening the front and rear panels together. 8 figures. W.B.W.

MCMILLAN, HAROLD I. Parcel bag. U. S. patent 2,650,016. Filed March 31, 1949. Issued Aug. 25, 1953. 3 claims. Assigned to Cohoes Envelope Company, Inc. [Cl. 229-55]

A reinforcing panel of heavy paper or cardboard is fastened inside a paper bag by attachment along one wall adjacent to the bottom of the bag. When placing articles into the bag, the panel is forced down until it rests on the bottom of the bag, thus preventing rupture of the bag bottom when carrying asymmetrical objects such as shoes, hardware, etc. 3 figures. W.B.W.

NEUGEBAUER, WILHELM, BARTHENHEIER, JAKOB, and REBENSTOCK, AUGUST. Paper printing foils for lithographic purposes and a process of preparing them. U. S. patent 2,649,373. Filed Oct. 18, 1948. Issued Aug. 18, 1953. 10 claims. Assigned to S. D. Warren Company. [Cl. 95-6]

A paper backing with wet-strength properties is coated with a mineral filler and adhesive (parchment paper may also be used), whereupon a top coating of a diazo sulfonate compound capable of yielding an oleophilic decomposition product upon exposure to actinic light is applied. The top coating is free from coupling components and tannable colloidal substances. The diazo com-

pound may be formed by condensing one mole of 4-amino-diphenylamine with one mole of paraformaldehyde in sulfuric acid of 60°Bé. The sulfonate is prepared by reaction of the diazo compound with sodium sulfite and drying. The resulting products are suitable for greasy-ink receptive planographic printing plates for photolithography. W.B.W.

NEUMANN, FRED W., and WILLIAMS, WILLIAM W. Diazotype photoprinting material. Canadian patent 495,547. Filed Dec. 15, 1949. Issued Aug. 25, 1953. 8 claims. Assigned to General Aniline & Film Corporation.

White paper is coated with a light-sensitive layer containing a light-sensitive diazo compound, a water-soluble condensation product of formaldehyde with dicyandiamide, and a member of the group consisting of salts of ammonia and of aromatic amines. W.B.W.

RATHKE, HARRY C. Decalcomanias. Canadian patent 495,072. Filed Oct. 7, 1948. Issued Aug. 4, 1953. 26 claims. Assigned to The Meyercord Company.

A decalcomania for use on ceramics composed of fusible glass and bound by ethylcellulose (I) and methylmethacrylate resin (II) with an outer supporting film of the same materials is supported on a paper backing with a soluble adhesive. The decalcomanias are soaked in water to soften the soluble adhesive, then transferred by sliding from the paper backing onto the ceramic material. An open film is formed by the use of immiscible materials such as (I) and (II) with a reduced tendency to blowholes and pits. 5 figures. W.B.W.

WACHTER, AARON, and STILLMAN, NATHAN. Corrosion inhibition. Canadian patent 495,578. Filed March 10, 1947. Issued Aug. 25, 1953. 15 claims. Assigned to Shell Development Company.

A method for inhibiting corrosion of metals normally corrodible by contact with water vapor involves the application of volatile organic nitrogen-base nitrate salts to kraft paper or board used as wrapping materials. This is identical with U. S. patent 2,643,178 (June 23, 1953); *cf.* B.I.P.C. 23: 946. W.B.W.

WALL, MARVIN L. Tags. Canadian patent 495,161. Filed Feb. 15, 1951. Issued Aug. 11, 1953. 3 claims.

A paper-stock identification tag for livestock, baggage, and the like contains an intermediate reinforcing strip of sheet metal, plastic, etc. This corresponds to U. S. patent 2,545,505 (March 20, 1951); *cf.* B.I.P.C. 21: 600-1. 5 figures. W.B.W.

PLASTICS—PAPER-BASE

GRABOWSKI, EDWARD W. Laminated ski. U. S. patent 2,648,543. Filed Dec. 30, 1949. Issued Aug. 11, 1953. 2 claims. [Cl. 280-11.13]

A ski of hollow box construction formed by a laminated paper or fabric layer on the top and bottom with wooden strips as side walls is claimed. The resin-impregnated laminated top and bottom panels are secured to the side strips by resin adhesive, and the interior space is filled with a vibration-dampening material such as vulcanized sponge rubber. The ski is formed in front and rear sections which are locked together at the midpoint of the ski. 12 figures. W.B.W.

PULP STONES

EFTRING, KARL E. Grindstone cleaning device and method of cleansing grindstones. Canadian patent 495,133. Filed Sept. 11, 1947. Issued Aug. 11, 1953. 4 claims.

A device for cleaning fiber particles from a pulp grindstone employs a brush in contact with the stone. The axis of the brush may be parallel to that of the stone or slanted, and the brush may be driven frictionally from the stone or by other means to impart a faster or slower rotation than that which would result from frictional engagement. 2 figures. W.B.W.

SETUP BOXES

YOUNG, LEWIS D. Cardboard box. U. S. patent 2,648,486. Filed March 23, 1953. Issued Aug. 11, 1953. 4 claims. Assigned to Douglas Young, Inc. [Cl. 229-44]

This is very similar to U. S. patent 2,648,485 (*cf.* abstract below), except that an anvil member is added outside of the paperboard wall where the hinge is attached to strengthen the hinge attachment. This plate is concealed by the cover paper applied over the exterior of the box and lid. 7 figures. W.B.W.

YOUNG, LEWIS D. Cardboard box spring hinge. U. S. patent 2,648,485. Filed Jan. 6, 1951. Issued Aug. 11, 1953. 2 claims. Assigned to Douglas Young, Inc. [Cl. 229-44]

A piano-type hinge of relatively lightweight sheet metal is fastened to the walls of a box body and its cover by means of projections stamped in the hinge leaf, then forced into the paperboard and clinched. A spring clip engages the upper and lower leaves of the hinge and holds the cover in either the open or closed position. 8 figures. W.B.W.

SHIPPING CONTAINERS

BELSINGER, JACK R. Heavy duty fiber container. U. S. patent 2,648,484. Filed Feb. 19, 1951. Issued Aug. 11, 1953. 3 claims. Assigned to Belsinger, Inc. [Cl. 229-36]

This container is formed from heavy fiberboard with locking ears and slots for assembly of the container without need of any other fastening means. Cover members are an integral part of the blank and meet at the center line of the container on the long axis. A reinforcing strip, preferably of wood, is secured at the top of the carton between the end members and extends from side to side of the container. 5 figures. W.B.W.

BELSINGER, SAMUEL P. Easy packing deep container. U. S. patent 2,648,480. Filed July 12, 1948. Issued Aug. 11, 1953. 1 claim. Assigned to Belsinger, Inc. [Cl. 229-7]

A shipping container of greater depth than the reach of the packer for lightweight articles such as textile products is formed by slitting and scoring a rectangular blank. The front panel is hinged at a point about 20 inches from the bottom of the carton; this panel may be folded down to allow easy access to the interior. After the container is packed, the flap is closed and sealed with adhesive tape or similar means. 5 figures. W.B.W.

BELSINGER, SAMUEL P. Heavy duty fiber container. U. S. patent

2,648,481. Filed March 1, 1950. Issued Aug. 11, 1953. 1 claim. Assigned to Belsinger, Inc. [Cl. 229-27]

A heavy-duty, two-compartment shipping container for eggs, fruit, and the like is formed from a substantially rectangular blank by scoring and slitting. The front and rear walls and the central partition are of double construction; the double layers are held together by stitching in the front and rear panels. The top member with a flap for engagement between the double front walls is a continuation of the rear wall. 8 figures. W.B.W.

BELSINGER, SAMUEL P. Heavy duty fiber container. U. S. patent 2,648,482. Filed March 1, 1950. Issued Aug. 11, 1953. 1 claim. Assigned to Belsinger, Inc. [Cl. 229-27]

This container is very similar to that claimed in U. S. patent 2,648,481 (*cf.* abstract above), except that the method of construction is altered slightly. 6 figures. W.B.W.

BELSINGER, SAMUEL P. Heavy duty fiber container. U. S. patent 2,648,483. Filed Nov. 9, 1951. Issued Aug. 11, 1953. 1 claim. Assigned to Belsinger, Inc. [Cl. 229-27]

A two-compartment fiber shipping container is formed from a one-piece blank in such fashion that the side walls and the central partition are of double construction. The cover members are in two sections, each section forming the double panel for the end wall and the cover for one half of the container. Flaps on the cover members are held between the double partition members. 6 figures. W.B.W.

BROOKS, LEWIS C. Consumer type container. U. S. patent 2,649,238. Filed Feb. 17, 1950. Issued Aug. 18, 1953. 2 claims. Assigned one third to Ira M. Jones. [Cl. 229-23]

A container formed from fiber or paperboard or other suitable sheet material has a cover which is an extension of the rear wall of the container. A turned down flap on the unattached edges of the cover is engaged in a groove in the upper edge of the carton body. This groove is formed by a series of folds in the fiberboard body. The cover may be reclosed as often as necessary and still retain a tight seal. 15 figures. W.B.W.

FRANKENSTEIN, WILLIAM P. Cartons. Canadian patent 495,082. Filed Sept. 29, 1952. Issued Aug. 4, 1953. 13 claims. Assigned to Patented Packages.

A shipping or display carton suitably printed or lithographed, which may be subsequently modified to a toy building, is claimed. 25 figures. W.B.W.

RITTER, ALEXANDER S. Plant shipping container. U. S. patent 2,649,807. Filed Nov. 28, 1950. Issued Aug. 25, 1953. 2 claims. [Cl. 47-37]

A container for shipment and display of a potted plant comprises an elongated box with a partition panel, the lower end of which engages the pot and positions the same within the container. A U-shaped clip incorporated in the carton holds the soil in the pot and the pot to the bottom of the carton. 4 figures. W.B.W.

ROSSI, HARRY J., and WEISS, ARTHUR J. Single blank carton with display card cover. U. S. patent 2,649,195. Filed April 6, 1950.

Issued Aug. 18, 1953. 2 claims. Assigned to Robert Gair Company, Inc. [Cl. 206-45.29]

A carton for shipment and display purposes may be shipped in a flattened condition and erected as needed. The cover member is an extension of the rear wall of the container and contains ears which engage the top opening in the carton. This holds the cover in a vertical position for display purposes. 6 figures. W.B.W.

SHIPPING CONTAINERS—MULTIWALL BAGS

LINDA, FRANK R. Bag for packaging tacky polymeric materials. U. S. patent 2,648,487. Filed July 25, 1947. Issued Aug. 11, 1953. 10 claims. Assigned to St. Regis Paper Company. [Cl. 229-55]

A multiwall paper bag for packaging tacky polymeric materials (such as butyl rubber) comprises an inner layer to which is bonded a polyethylene film by a low melting-point wax. The polyethylene layer bonds to the butyl rubber, and fracture of the wax layer facilitates removal of the material from the bag. Alternately, an oil-saturated clay coating may be applied to the inside of the bag tube with a second coating of resin such as polystyrene, etc., the clay coating acting as the fracture layer and the resin adhering to the rubber upon removal from the bag. 12 figures. W.B.W.

VACUUM PACKAGING

MUELLER, WILLIAM G., CHEREPOW, FREDERIC H., BARTES, AUGUST, JR., and KLAUSE, KARL. Method of evacuating and heat-sealing packages. Canadian patent 495,240. Filed Nov. 25, 1952. Issued Aug. 11, 1953. 6 claims. Assigned to Marathon Corporation.

Projecting ears of a filled package made from a heat-sealable film are clamped between jaws, and vacuum is applied to remove the entrapped air. The package is then heat sealed while the vacuum is still applied, and the jaws are removed. By this means, the package is evacuated directly thereby eliminating troublesome mechanical seals encountered when the package is evacuated in a special chamber. 23 figures. W.B.W.

Book Review

Organic analysis. Editorial Board: John Mitchell, Jr., I. M. Kolthoff, E. S. Proskauer [and] A. Weissberger. New York, Interscience Publishers [c1953] v. 1. 473 p.

This volume is intended to be the first of an annual series dealing with the analysis of systems which are of organic nature. The editors justify a new series by the shift of organic analysis from elementary composition and determination of specific compounds to determination of characteristic structures and functional groups. The rapid development of instrumental techniques in recent years also has made possible wholly new fields of study. The first volume contains nine chapters, each by a separate author or group. The functional groups given consideration include hydroxyl and alkoxyl groups, the alpha-epoxy group, carbonyl compounds, acetals, and organic sulfur groups. Two chapters deal with the determination of active hydrogen. The final chapter is concerned with spectroscopic functional group analysis in the petroleum industry, and seems out of place in this volume. The discussion of other functional groups projected for later volumes could well have replaced it, reserving this chapter for treatment with other methods of a general type. The discussions of the methods and coverage of the literature appear to be exceptionally thorough. Although the treatment is inclusive, a critical consideration has been given in most instances so that the reader is guided by the judgment and experience of the authors. The applicability and limitations of the methods and the effects of interfering substances are discussed, although all too frequently it will be realized that the desired information on the effect of extraneous materials simply is not available. A number of recommended procedures are given in sufficient detail to be used as a laboratory guide, but the book is by no means a laboratory manual, and the discussions may need to be supplemented in some cases by reference to the original literature. The books on organic analysis which have appeared in relative profusion within recent years attest to the growing interest in this important field and to the need for adequate analytical methods. The chemist who has the problem of analyzing organic materials may wish to have the present volume available for frequent reference and repeated use.

B. L. Browning

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